The TROPICAL AGRICULTURIST

MONTHLY.

Vol. XVII.] COLOMBO, JANUARY 1ST, 1898. [No. 7.

BUITENZORG BOTANICAL GARDENS, JAVA: A LESSON TO INDIA AND CEYLON.

We have to acknowledge receipt of copies of "Hand-Guide to the Botanic Gardens, Buitenzorg with a plan published under supervision of the Director in Batavia, by G. Kolff & Co., 1897"—all printed in English and all very interesting. It includes besides the "introduction," a walk through the Botanic Gardens; a visit to the Agricultural and Experimental Gardens (which we must copy in full into our next *Tropical Agriculturist*); and "an index of scientific and vernacular names." The Guide is clearly modelled on the one drawn up for Peradeniya by the late Dr. Trimen; but the Java Gardens are far more diversified—although the Buitenzorg Botanic Garden itself at 145 acres is almost exactly the same area as Peradeniya which includes 150 acres. The Dutch Director has, however, a virgin forest reserve of 700 acres, as may be seen later on. Meantime we transfer the introduction as follows:—

The Botanic Gardens at Buitenzorg were established in April 1817, at the suggestion of Reinwardt, who was afterwards a Professor at the Leiden University. During Reinwardt's stay in Netherlands-India there was no special director for the new botanical establishment, he took over the superintendence himself. On his departure from Java Dr. C. L. Blume was appointed the first Director of the Buitenzorg gardens.

Blume proved to have remarkable abilities for natural science; in a short time he got great renown as a botanist and so the gardens seemed to have under his direction, a very satisfactory prospect. But, after a stay of four years, Blume was obliged to go home on account of his bad health; there was no director appointed as his successor, the gardens were left in charge of a curator.

The curator James Hooper, an able man, who came originally from the Royal Kew-gardens, returned to Europe in 1830. A young gardener just arrived with a new Governor-General was selected as his successor.

The young man's name was J. E. Teysmann; devoid of the slightest scientific notions, lacking even ordinary general instruction, and having had but a very superficial training in horticulture, he seemed rather an unqualified person for filling up the post of curator. Happily the Buitenzorg gardens belong to the institutions which have good luck. Teysmann turned out to be a most energetic man, with a bright intelligence and greatly gifted for natural science. By self-training and hard work, guided by a clear insight and supported by a keen aptitude for organization, he became, in fact, a second founder of the gardens, with which his name will always be inseparably connected.

In the course of his career as a curator Teysmann was assisted by two very clever men, J. K. Hasskarl, and S. Binnendyk. Hasskarl, afterwards famous as a botanist, was the man who suggested a new plan for the gardens, in order to have all the plants, even the trees and shrubs arranged after the natural system. That idea, once grasped by Teysmann, was pushed by him, often under great difficulties, with fierce energy. The arrangement after the natural system, in some parts already sixty years old, constitutes now one of the prominent features of the Buitenzorg botanic garden. It makes it still compartively easy to study the plants and especially to compare the species belonging to the same natural order, though the number of species under cultivation is now some 10,000, covering an area of 145 acres.

Binnendyk was appointed assistant-curator in 1858. His services were of great value, not only because he was a very able horticulturist, but also because he had had a fair training in systematic botany at the Leyden botanic garden. And so as Teysmann resigned (in 1869) Binnendyk was of course, selected as his successor.

In the mean time the whole institution was reorganized, on a plan drawn up long before by Teysmann.

There was to be a Director again, and it was Dr. R. H. C. C. Scheffer who in 1868 was apppointed the second Director of the Buitenzorg gardens. Having made thorough studies in botany under Miquel's direction at the Utrecht University Dr. Scheffer although young, was well prepared for the post. Devoting as much of his time as possible to research and original scientific work, he had the good idea of starting in 1875, the *Annales du Jardin Botanique de Buitenzorg*, a scientific periodical still existing. Beyond all other things the Buitenzorg establishment is most indebted to the late Dr. Scheffer, for establishing, in 1876, a special garden, on a large scale (an area of more than 180 acres) for agricultural and experimental purposes. He added also an agricultural school to this experimental garden. This school lasted only a few years. Without time to go on furlough to Europe to restore his health, Dr.

Scheffer died, of overwork, in the beginning of 1880, only 36 years old.

Dr. Treub was selected as his successor. This gentleman, who has been in charge since 1880, still continues the extensions begun in 1876 by Dr. Scheffer.

The institution still called "'s Lands Plantentuin" consists of the following nine Divisions:—

Division I. Herbarium and Museum.
„ II. Botanical Laboratories.
„ III. Agricultural and experimental garden (181 acres) with Laboratoy for agricultural chemistry.
„ IV. Pharmacological Laboratory.
„ V. Botanic Garden (145 acres) and Mountain Garden (77 acres and 700 acres of virgin forest) with Laboratory.
„ VI. Office, Library and Photographic Laboratory.
„ VII. Forest flora collections.
„ VIII. Laboratory for the study of Deli Tobacco.*
„ IX. Experimental station for coffee.†

The second division has special laboratory accommodation for 8 foreign visitors, the institution acting, since 1885, also as an international botanical station that has already been visited by a great number of foreign naturalists.

It is hardly necessary to point out that the name of "Botanic Garden," does not give a fair idea of what the "Buitenzorg Institution" actually is. What is now the 5th division, corresponds, in general lines, with what was "the Botanic Gardens" till 1876.

In Dutch the difficulty arising from a no longer appropriate name, is partially avoided by keeping for the whole institution the original name "'s Lands Plantentuin" and giving the name "Botanische tuin"† to the Botanic Garden belonging to the 5th division.

The Buitenzorg institution is working now with a staff of 27 Europeans, and over 200 natives.

The immense extent and variety of the Java Gardens must at once strike the reader; but still more conspicuous is the scientific as well as the practical enterprise of the Dutch Government in the staff of 27 Europeans and 200 natives attached to the Buitenzorg institution. It is useless to compare this with the three Europeans and handful of coolies given to the Gardens in Ceylon; but we believe it may be compared (to the advantage of Java rather than India) with what the Government of India does for the opposite Continent in this department. Ceylon ought at least to have a scientific staff of half-a-dozen Europeans—Director and Assistants, Entomologist, Cryptogamist, Analyst, &c.

* The divisions VIII and IX work at the expenses of private committees of persons interested in the culture of Deli tobacco and of coffee.

† The Dutch word "tuin" means gardens.

THE "DURIAN" AS A NEW PRODUCT.

Now that tea prices are low, exchange high, cacao attacked in some places by a fungus disease, and perhaps other adversities looming before us,—the question of "New Products" is again being freely mooted by planters. and among other resources, at such a time, the durian as a fruit-tree may well claim our attention.

Fruit culture in Ceylon as a profitable industry, as well as for local consumption, has been frequently discussed in the columns of the *Tropical Agriculturist*, but notwithstanding it is still looked upon only as a prospective venture. The obstacles that lie in the way of such an undertaking are not all imaginary, it is true. The prospects of a local market are not sufficiently encouraging, and the variety of really good fruits that have so far been found suited to our climate and soil is somewhat limited. Orange and lemon cultivation has not made the strides that were predicted some years ago; neither have pineapples and plantains yet tempted cultivation on any considerable scale. The mangosteen and avocado-pear have not been entirely overlooked; but the durian so far is somewhat of a *rara avis* with us. Observant visitors to our shores are quick to observe that if we are *fruges consumere nati*, our choice of locally-grown table fruit can hardly be said to redound to the credit of the planters whose reputation as the best agriculturists in the tropics has travelled so widely.

Although the durian (*Durio zibethinus*) may in one way or another be known to many of us, yet the opportunities of becoming acquainted with it in Ceylon are very few. This is much to be wondered at considering that in our comparatively near neighbourhood—the Malay Peninsula and islands—the tree is met with plentifully, both in its natural growth and in its cultivated state. Any one who has lived for any length of time in the countries mentioned must perforce be acquainted with the name of durian, and probably also with its flavour. There all the natives are born durian-eaters; even the dogs, cats, and tigers are said to be fond of it, and especially the civet cat, to entrap which it is often used as a bait: hence the specific name.

The durian fruit to the Malayan inhabitants has many wonderful attributes, however adversely its odour may be classified by people inclined to be delicate in the olfactory sense. Irrespective of drawbacks in this way—which in time may be considered trifling—the craving of the natives for the fruit is simply insatiable; and, when in season, many families, not content with the local supply, remove from their homes and fix their abode temporarily, in fact camping out, in areas where the durian is found to be plentiful. One of the chief attractions of the fruit to them is the aphrodisiacal properties which they invariably believe it to possess. That it is in a measure exciting is scientifically admitted. Europeans also, notwithstanding the smell which is at first rather offensive, (being likened unto putrefying rats combined with rotten onions!) soon come to regard the fruit with peculiar favour, and when once they acquire the necessary taste, which is usually after the third or fourth trial, it is said to replace all other delicacies in the way of fruit. In fact, it has been said that the sensation of eating durians is in itself worth coming to the East for; and some writers on the subject describe it as being "beyond question the finest fruit in the world." It might be supposed too that it is also somewhat of a braintonic, for Governors of Ceylon—notably Sir Arthur Gordon, and others performing mental work of a responsible character—have declared that there is nothing to beat a good durian.

The Dutch ladies in Java are credited with having developed a considerable liking for it, and to be reported "eating durians" is often sufficient excuse for their non-appearance to visitors. A durian in general appearance is not unlike a small jak fruit, though of course differing widely in its natural affinities. The chief point of resemblance between the jak and durian is found in the peculiar angularily-marked rind surface common to both, and which in the latter forms a complete covering of stout spines or prickles. In both cases the fruit is borne on the older branches and trunk; but this is also characteristic of very many other tropical trees. In shape, a

durian fruit is somewhat oval, and about the size of a large coconut. So the danger of walking under durian trees when laden with fruit can be readily appreciated. Fortunately, however, the fruits usually fall at night, seldom during the day. The edible portion is the cream-coloured fleshy pulp in which the seeds, which are about the size of nutmeg seeds, are embedded. The very mention of this pulp is enough to bring water to the mouth of durian epicures! The flavour is certainly all its own and apparently defies adequate description. A combination of cream-cheese, Sherry wine, and onion sauce, and other similar incongruities, seems to convey the most general conception of it. Various notions exist as to

WHEN THE FRUIT IS BEST FOR EATING.

Some say it should be left on the tree till ripe enough to drop or until it opens naturally (dehisce*). Very often, however, many of the fruits fall before reaching this stage either on account of their weight, wind, or heavy rain. But in many opinions this does not in the least detract from the quality of the fruit—provided the fall is not too early, of course—for it can be kept from a week to ten days to ripen.

For a novice to know whether a durian is fit for eating, it is only necessary to press the foot on it: if ripe, it opens at the growing end, showing five separate divisions. Those who are better accustomed to it, however, are guided more by the intensity of the odour which it emits, and of course, by the yellow tint the fruit assumes when ripe. Like almost all tropical fruits, the durian can also be used in the unripe state in a variety of ways as a vegetable: not even the seeds need be wasted, if not required for sowing. The conventional way of eating a durian is to retire to the bathroom or godown, with only nature's knife and fork (the fingers) to deal with it. But those who stand on scruples of etiquette may find the following recipe more to their taste:—

Extract the pulp from the fruit and leave it standing (in the back verandah) for a few hours, so that the offensive scent may escape; then place in a basin, and pour on it some fresh milk or cream; add a table spoonfull of sugar, or more if needed; beat well together to the consistency of thick cream; if the odour is still objectionable, add a few drops of rose-water; whisk the whole well, taking out any strands of fibre there may be, and serve the ambrosia. Unfortunately the durian does not readily recommend itself as a regular table fruit, for reasons already indicated. But the chief consideration for the present is

WILL DURIAN CULTIVATION IN CEYLON PAY?

The following facts justify a reply decidedly in the affirmative. Judging from what one sees in the markets of Colombo, Kandy, and Galle, the production of durian fruit in Ceylon is practically *nil*. In July and August, a few fruits are irregularly brought there and readily disposed of at prices varying from 50 cents to R2 each, Europeans often paying more than this when an opportunity of buying offers. Probably the largest and best fruits never find a place in the local markets, being sold to regular customers and given as presents to friends. A few trees on one favoured estate a few miles from Kandy supply all the fruit that reach the market of that town. More or less in consequence of this, many of the wealthier Malays, we are told, leave Ceylon for their native country annually when the durian season there is approaching. From the prices mentioned, and the fact that even the ordinary Malay, Chetty, and Moorman—or for the matter of that all well-to-do inhabitants of the tropics, for the Sinhalese, Tamils, and Bengalees, have exhibited an indomitable desire for the fruit—is "fit" for anything between 50 and 200 durians in one season, it is evident that large quantities of the fruit could be profitably disposed of every year, in Ceylon. Unfortunately however the tree does not come into bearing until at least 14 or 15 years after planting. Nevertheless it warrants at any rate, a share of the patience that tropical planters are wont perforce to exercise, not unfrequently. It may therefore be placed on a par with the coco-palm; and the planter of durians in the island may feel assured his property will yearly increase in value. When in bearing each tree will mature from 50 to 300 fruits. Planted at 30 feet apart, an acre would contain about 50 trees, which at the low average of 100 per tree would give 5,000 fruits; these if sold at 50 cents each (now the minimum rate) would give the appreciable return of R2,500 per acre. This forms a contrast with the best record returns from tea or coffee, especially when it is understood that hardly any outlay is necessary on the cultivation of the durian tree, and that it can be grown from sea-level to 1,500 feet altitude in the humid Central and Southern districts of Ceylon. Of course, 50 cents per fruit is not a rate to base an orchard or estate estimate on; but put it at 10 cents each and where else can we look for a gross return of R500 per acre? We have

AN ADVANTAGE OVER OUR INDIAN NEIGHBOURS,

for despite many meritorious trials at Calcutta, Madras, &c., they are not yet able to revel in their own durians. The variableness of that climate is quite unsuited to the plant, and even in the southern parts of India the durian can only be grown as a matter of curiosity. Consequently with the latest improvements in the system of cold storage, the development of an export trade in durians with India and other countries seems eminently feasible. The durian, though a fruit-tree, does not on that account lack in being

AN EXCEEDINGLY ORNAMENTAL AND GRACEFUL TREE.

It is the tallest fruit-tree in the world, reaching a height of 90 feet or more, is evergreen and always symmetrical in shape and well-proportioned in growth, so that it cannot readily be surpassed as an avenue tree. As a wind-belt and shade-tree for lowcountry estates, it would also no doubt prove a valuable acquisition, for the older trees afford good fuel, and the trunks being remarkably straight and of large girths would, if required, make excellent planks, etc. As to cultivation, the tree thrives in deep marly loam. It might be described as a deep feeder, there being no tendency to develop buttressed roots above ground, as might be expected from its size. When planting, unless the ground has been deeply tilled already, it is best to dig holes four or five feet deep by five feet wide, which should be filled in with such soil as mentioned above. Once the plants reach a height of nine or ten feet, which they do in three years in a favourable situation, practically no care is needed beyond keeping down undergrowths and protection from cattle, which are often fond of the young twigs and leaves. The fruits set independently of any

* Dehisce=to get open as the pods of plants.

artificial agency; that is, the flowers are *complete* (the two sexes in one). Plants can be raised by means of "cuttings," but propagation is best from seeds, which are remarkable for their power of quick germination, taking only about seven days to germinate. As a natural consequence, however, they soon lose their vitality, so they should be sown immediately on being taken from the pulp. In three or four months' time the seedlings are ready for transplanting to their permanent places.

VARIETIES:

Considering that the durian has been cultivated, though not on any systematic principle, for some centuries now, we cannot be surprised to find there are a few varieties, some being more prolific than others. It is difficult however to discriminate between them till they reach the fruiting stage. Closely allied to the durian is the "Katuboda" (*Cullenia excelsa*) of the Sinhalese known also as the "wild durian." This tree is fairly common in Ceylon, at low and medium altitudes in moist districts. The fruit is not eatable, but monkeys are very fond of it. It resembles durian proper in foliage and structure of fruit, and in fact the two are sometimes confused by botanists unacquainted with living specimens. The "Katuboda" however can easily be distinguished by the leaves being narrower, the fruit much smaller and overed with thickly placed, long, slender, recurved spines, and of course by the absence of a pronounced odour. [The "Katuboda" fruit is variable in the character of prickles: a specimen just under examination shews these to be rather closely set and sinuated, not regularly recured.]

THE CULTIVATION OF INDIA-RUBBER IN NICARAGUA.

There has been a revival of interest in Nicaragua in the future of the India-rubber industry there, due to the decreasing yield and the resulting fear that the methods practised by the gatherers hitherto will lead to the extinction of the trees. The government has manifested its interest by means of the decree, published lately in The India Rubber World, prohibiting the exportation of other than cultivated rubber for the next ten years. This decree was preceded by laws for the encouragement of rubber-planting, and something has been done in this direction. But how far any law can prevent the exportation of native rubber remains to be seen. The United States consul at San Juan del Norte reported recently that, "notwithstanding the law made in Costa Rica some years ago prohibiting the cutting of rubber, much of the rubber shipped from San Juan del Norte comes from Costa Rica. It is estimated that Costa Rica has contributed between 35 and 60 per cent. of all the rubber shipped from San Juan del Norte."

Recently many persons in western Nicaragua—the Pacific-coast section—have declared their intention to plant and cultivate India-rubber in the eastern portion of the republic, investing some of the money which they have accumulated during several years past from their profitable coffee estates. Likewise many requests for information have been received in Nicaragua from citizens of the United States, bearing upon the whole subject of rubber cultivation, the impression evidently existing in many minds that India-rubber is becoming a scarce commodity. These circumstances have led to the preparation of some reports of interest published recently by the department of state, at Washington—one by Thomas O'Hara, the efficient consul at San Juan del Norte, and one by J. Crawfords, of Managua, the author of a paper, included in the volume of special consular reports prepared at the instigation of The India Rubber World in 1890, which forms the most valuable coutribution to our knowledge of Nicaragua rubber.

Consul O'Hara first calls attention to an extract from the Bluefields, *Recorder*, of June, 6, 1896, as follows:—

"On this subject of agriculture, we may add that a great deal of attention is being given to the cultivation of the India-rubber tree. Several of our banana growers on the river, while cultivating the product of the more rapid growth (the banana), devote some of their time to the India-rubber tree, which has the advantage of being a product full of staying qualities, yielding handsome profits after it has attained its full development, and which has not that baneful influence on the soil which is the peculiarity of the banana. We do not believe that we are beyond the mark when we say that there are to be found on several plantations on the Escondido more than 75,000 rubber plants, vigorous and promising, ready for transplantation. Ten or twelve years after these shall have been planted, bananas will be nowhere; the very places where they are now grown will be exhausted and allowed to lie fallow for the subsequent cultivation of other and less ephemeral products."

The consul has undertaken an inquiry respecting the details of such plantations, and he reports having learned through Vice-Consul Henry E. Low, at Managua, of two rubber plantations in western Nicaragua, with a producing capacity not to exceed 5,000 pounds a year. Further information on this head is promised to the department.

Mr. Crawfords writes in his report that localities in Nicaragua south of latitude 15° north and between longtitudes 84° 10' and 85° 35', in low valleys where the soil is deep alluvial or deep vegetable humus and sand and capable of being rapidly drained and in a climate that is almost uniformly warm and humid, are best suited to the rubber tree. Many such valleys in central and north eastern Nicaragua supported groves of large-sized trees yielding rubber until about fifteen years ago, when nearly all the trees had been killed by too frequent tapping, or by being cut down by irresponsible collectors. There are, by the way, several species of rubber trees in Nicaragua, some of which are indigenous to a higher, drier climate and soil. Mr. Crawfords uses the term "elastic rubber" throughout his report, because some varieties, as the "tuno," for instance, are but slightly elastic.

Next to the *Castilloa elastica*, the second best rubber producers, in quality and quantity, are of the *Ficus* family, a variety locally known as 'matapala,' an epyphite having numerous bodies from aërial roots (like the banyan tree). It is also an inhabitant of low, fertile, well-drained lands. By cultivation, this tree would, most probably, fully equal the other low-valley varieties in quality and annual output of rubber. It has the advantage that if one of its trunks or bodies is deadened by excessive bleeding or drainage of the sap, it has several other live trunks from which to obtain supplies of rubber." Evidently the tree thus described by Mr. Crawfords is not unlike the rubber tree of Assam and Burma.

"The quantity of the annual yield of elastic material depends," says Mr. Crawfords, "the soil and climate being suitable, on the bulk of the bast or lactiferous tissues that exist or that can be developed in the tree or vine. Some trees of two to three feet diameter and thirty-five to fifty feet tall will give annually twenty to forty pounds of good rubber. The quality of the rubber depends largely upon the shape or form of the cells and spaces composing the bast, or lactiferous tissue, and in part in the process used to separate the elastic material from the emulsion-like sap. Quality and quantity, therefore, are responsive to cultivation—to be increased or decreased."

Cultivation begins with sowing the seeds in beds and transplanting to a nursery at the end of the first year, and to the permanent plantation at two

and a half or three years. The planting is at such distances apart as to allow sixty-four "matapala" or 100 *Castilloa* trees to the acre. "Cultivation consists in ditching the land so as to drain it slowly or rapidly at will, keeping it moist without permitting water to stand in pools or low places. During the rainy season, drain rapidly. Keep all undergrowth cut down and the land 'hilled up' around the trees in cone shape to about six inches higher than the general level within five feet of each tree. Deaden or fell other varieties of trees and vines until they shade but a very small part of the surface of the land."

Tapping may begin during the sixth or seventh year of the tree's age. If the tree has matured properly it should yield from eight to twelve pounds of rubber every second year until it is twelve years old, after which ten to fifteen pounds of rubber should be obtained annually. "The coagulation of the milk and the separation from it of the elastic material can be effected by heating to 167° to 175° F. and stirring in a hot decoction or hot, strong tea of the leaves and twigs from some species of *Convolvulacœ*—as morning glory or bindweed, or, stirring into the emulsion, when fresh and hot, the smoke from burning palm-nuts or other oleaginous nuts—all of which are abundant in districts where the rubber trees grow."

Secondary crops which may be grown profitably between the rows of rubber trees until they reach a productive age are Liberian coffee and bananas, the latter of which would afford a large percentage of the food required by all the animals on the estate.

As for profits, Mr. Crawfords estimates that sixty-four trees to an acre, at nine years of age and thereafter, should yield an average of ten pounds of rubber, or 640 pounds to the acre. At 30 cents net per pound, this would yield $192 per acre, which should give considerable profit, the cost of cultivation being so slight. The net profit from an acre of coffee trees in Nicaragua is given at $65.

Consul O'Hara's attempt to compile statistics of the production of India-rubber in Nicaragua has not been entirely successful. For example, the customs recorded at San Juan del Norte extend back only to 1874, and the invoices on file since that date do not, for most of the years, specify the quantities of India-rubber shipped, but only the values. He is now trying to collect the figures for the other ports, but even if these can be obtained, it will be impossible to say how much of the total represented the product of neighbouring states.

The India Rubber World happens to have at hand the details of Central American rubber imported by Great Britain and the United States for the years 1870 to 1885, inclusive, the greater part of which was the product of Nicaragua. The larger share was taken by great Britain, until 1878, when the United States took the lead in the importation of Nicaragua rubber, which it has since maintained.

	Pounds.
Taken by Great Britain ..	6,654,780
Taken by the United States ..	13.789,499
Total for sixteen years ..	20,444,279

This without doubt practically embraces the whole production of Central American rubber for the years named, though a small amount may have gone direct to Germany. More than half this rubber was exported during the last four years (1882-85), and by far the greater part of this half was taken by the United States.

Nicaragua rubber then began to be entered separately in the United States customs returns, and the imports from that country alone have since been as follows, by fiscal years ending June 30:—

YEAR.	Pounds.
In 1885-86	1,552,574
In 1886-87	1,575,837
In 1887-88	1,545,121
In 1888-89	1,573,331
In 1889-90	1,209,730
In 1890-91	1,146,727
In 1891-92	1,027,232
In 1892-93	958,703
In 1893-94	892,908
In 1894-95	907,243

Meanwhile Great Britain has begun to record imports from Nicaragua separately, with this result, for calendar years: In 1892—7952 pounds; in 1893—37,072 pounds; in 1894—75,936 pounds; in 1895—33,264 pounds. There have also been unimportant shipments from Nicaragua to France, Germany, and Holland.

Just what has been the rate of decline in the output of Nicaragua rubber can only be conjectured, but that it has been great is proved by the following table showing the receipts of all Central American rubbers by the two great importing countries:—

	United States [a]	Great Britain [b]	Total Pounds.
In 1885 ..	2,079,278	237,552	2,316,830
In 1895 ..	1,300,802	33,264	1,334,066
Decrease ..	778,476	204,288	982,764

[a, fiscal year; b, calendar year.]

Nicaragua has not so long been a produce of India-rubber as many other countries. Its output suddenly more than doubled about 1880, continued at the figure then reached for a few years, and then began to decline at a rate which justifies the fears of the trade and the government that without protective measures the rubber tree will soon disappear from Nicaragua.—*The India Rubber World.*

INDIA RUBBER IN ASSAM.

A brief account of how rubber trees (*Ficus elastica*) are grown in Assam. By Mr. D. P. Copeland, Deputy Conservator of Forests, Darrang Division.

1. *Ficus elastica.*—The Indian rubber fig or caoutchouc tree, is indiginous to Assam, where it is found a dominant tree in the evergreen forests. It requires an exceedingly damp atmosphere, and the best natural rubber trees are met with in the forests at the foot of the hills, or on the hills themselves up to an elevation of 2,500 feet.

2. *Natural germination.*—In its natural state the rubber tree starts from seed dropped by birds in the forks of other trees, often 20 or 30 feet or even more from the ground, where it germinates, and the young plant remains an epiphyte for years until its aerial roots touch the ground; as soon as this takes place the little epiphyte changes rapidly into a vigorous tree, throwing out numerous aerial roots which gradually envelope the tree on which it first began life and often kills it out.

Having started life so high up it soon throws out branches which overtop the surrounding trees, and the numerous aerial roots which fall from these and establish connection with the ground, in a few years enable it to dominate the forest growth around it.

3. *Seed.*—The seed of this tree is contained in a fig-shaped fruit about 75 seeds being found in one good sound fig. The fruit first begins to form on the trees in March and ripens from May onward to December. On some trees the whole crop ripens and falls off by June, but as a rule the rubber tree has fruit on it from April right up to December, the figs forming, ripening and falling off the whole of the rains.

After collection the figs have to be carefully dried and mixed with pounded charcoal, which preserves the seed for several months.

4. *Seed beds.*—In the Charduar rubber plantation nursery, for a seed bed 40'×3½', two to three seers of pulverized rubber seed, 10 seers ash and 20 seers of vegetable loam or good soil, are well mixed in a half cask and spread evenly over the bed, and then lightly stamped down and watered. Such a bed should yield with good germination, 2,000 seedlings and should be sufficient for putting out 100 acres of rubber planted 70'×35'. The beds must be

well raised and drained, the soil being prepared in the same way as for vegetable or flower seed. If sown in boxes these should be put under the leaves of a house; if in beds light removable shades must be put up to keep off the direct rays of the sun. The shades should be removed during rainy or cloudy weather and at night.

Light sandy loam is most suitable for seedbeds, if the soil is stiff, charcoal dust should be mixed with it to make porous and prevent caking. The beds or boxes must never be allowed to get dry.

5. *Sowing.*—This should be done exactly in the same way as for vegetable or flower seed which requires transplanting after germiuation. The figs are broken between the hands. As the seed is very minute the particles of the fruit are left with the seed and sown with it, no attempt being made to clean or separate the pulverized figs. In order to distribute these minute seeds evenly over the seed beds or boxes, a certain quantity of ash and soil is mixed with them.

6. *Germination.*—Germination takes place from the end of April to the end of rains. Seed sown between October and January requires daily watering and screening from the sun, and will not germinate before the end of April or the beginning of May but seed sown any time during the rains will germinate in a few days (from five days to a fortnight). It follows the best time for sowing seed is during the rains that is from June to September.

The embryo appears on the germination of the seed as a seedling having a pair of opposite cotyledons with an entire margin destitute of incisions or appendage of any kind, with the exception of the notched or emarginate apex, oval in general outline, green in colour and of a glassy smoothness. The second pair of leaves shew a tendency to the alternate arrangement on the stem but appear at the same time. Their shape and venation are very different from those of the primary leaves for they have a central midrib and a distinctly coarsely crenate margin. The third pair of leaves do not appear simultaneously, and are distinctly alternate with a marked reddish colour. After this the plant is easily recognized.

7. *Pricking out.*—When the seedlings are two inches high in the seedbeds or boxes they should be transplanted into nursery beds, and put out in lines about a foot from each other. The nursery beds should be well raised and drained but the soil need not be so carefully prepared as for the seed beds. Here the plants are kept till the following rains when they are dug up and taken to stockaded nurseries in the forests and put out 5′×5′ on raised well drained beds; where they remain for two years till they are required for planting operations.

8. *Forest Nurseries.*—Almost every animal will eat the young rubber plants, it is therefore impossible to plant out small seedlings in the forest owing to the destruction by wild elephants and game, unless each individual plant is carefully fenced in. As this is too costly and the rubber after it is 1-2 feet in height is very hardy and can be transplanted with ordinary care, at any time of the year (the best time in Assam is between May and July), the seedlings are kept in stockaded nurseries in the forest where planting operations are to take place, and remain there till they are 10 or 12 feet high, that is about three years after germination, when they are dug out and the roots are cut back 18 inches right around the plant and planted on the mounds in the forests.

9. *Planting operations.*—In artificial planting it is found that the rubber grows best on mounds. Lines are cut through the forest 20 feet wide and 70 feet apart from centre to centre; in these lines 15 foot stakes are put up 35 feet apart. Round each stake a mound is thrown up 4 feet high. The base of the mound is about 10 feet in diameter and tapers to 4 feet on the top; on this mound the rubber tree is planted, care being taken that the roots are carefully spread out before they are covered up with earth. To prevent animals pulling the plant and wind blowing them down they are tied to the stakes.

10. *Cutting.*—The rubber tree can readily be propagated from cuttings, if only perfectly ripe young branches or shoots are used, but the tree raised from cuttings does not appear to throw out aerial roots, and as the future yield of the tree probably depends on its aerial root system it is questionable whether trees raised from cuttings ought to be used except where required only as shade givers, such as in an avenue. In the Chardaar rubber plantation propagation by cuttings were given up very early, that is about 1876, the plantation having been commenced in 1879. The best time to take cuttings is May and June.

11. *General.*—The rubber grows equally well on high land or low land, in forest land or grass land, so long as it is planted on a mound and its roots are not exposed to the sun. It is a surface feeder, but as soon as its roots appear above ground they must be covered with fresh earth until such time as the tree has formed sufficient leaf canopy to protect itself.—*The Indian Forester.*

THE EXTRACTION OF GUTTA-PERCHA FROM THE LEAVES OF THE ISONANDRA GUTTA-PERCHA TREE.

Mr. Bourdillon has sent as a copy of an interesting report on the above subject by Professor W. Ramsay, Ph.D., F.R.S., of University College, London, from which we make the extracts given below. Could not a somewhat similar process be applied for extracting India rubber from the leaves of *Ficus elastica?* Perhaps some of our readers who are in charge of rubber forests would make experiments in this direction and let us know the results.

"The existence of a gum of a plastic nature in certain of the trees found in the Malayan Archipelago was first indicated by Montgomery, in 1832; but it was not until 1847 that Mr. Thomas L bb sent specimens to Sir Willian Hocker. The material extracted from this tree was named "Gutta-percha"—or the "Rag Gum," to translate the word literally. The word "rag" refers to the appearance of the gun before it has been kneaded into the usual compact form in which it is known in commerce. In 1848 the material was patented as an insulator for telegraphic wires by Messrs. W. H. Barlow and T. Forster, and in the following year by Dr. Siemens; so that its value for the purpose for which it is now in ever-increasing demand was early recognised. In 1849 Mr. Walker Breit laid the first cable, two miles in length, in the English Channel. It consisted of wire, insulated with Gutta-percha; and at the present date, with the exception of a small consumption for bottles and stop-cocks to resist the action of strong acids almost all the Gutta-percha produced is used to cover the wires of submarine cables. But the supply is far behind the demand. There is in existence to-day no less than 162,000 nautical miles of cable, and in 1884 over 3,000 tons were exported to England, involving the destruction of 12,000,000 trees of thirty years old. Owing to this great destruction of trees, the quantity of Gutta-percha in the market has been greatly diminished, and the price has risen accordingly, while the material is no longer of such good quality as it used to be. Indeed, it is stated ("Le Caoutchouc et le Gatta-percha," by E. Chapel, Paris, 1892) that the Chinese merchants are so much in the habit of adulterating the pure gum with resins from other species of trees, that it is not possible to find a pure specimen of Gutta in the market. The gums from species of Euphorbia are frequently used for this fraudulent purpose."

"There is great need to increase the supply of genuine Gutta-percha; and there is every prospect that a rich reward would recompense a successful effort to do so."

"The present process of producing Gutta-percha is, as has already been indicated, wasteful in the extreme, and very costly. The trees are either ringed, so as to cause a flow of sap, or felled, and in either case the tree is destroyed. Moreover the gum is mixed with impurities of vegetable matter, such as pieces of bark, and even with mineral matter, like sand and earth; to say nothing of the adulterations fraudulently added by the Chinese merchants. This necessitates a costly purification, which is achieved by softening and kneading the gum, or by squeezing it through wire gause or some similar process, the results of which are, at the best, not very satisfactory. Solution in bisulphide of carbon, or in benzine, has also been tried as a means of removing these impurities, but the quality is thereby deteriorated. After the impurities have been mechanically removed, the gum is rolled between grooved or spiral rollers to expel water and air."

"The yield from a single tree, too, is by no means great. A tree of fifteen to twenty years old gives only three to three and three-quarter ozs. of Gutta, one of thirty years old gives some nine ozs., according to Serullas; and Burck gives about ten ozs. as the yield of a dichopsis tree twenty-six years old."

"The juice as it flows from the tree is white, on standing, it solidifies spontaneously, forming a sort of pellicle on the surface. On boiling or heating the juice. the Gutta collects into a more or less coherent lump."

"The Gutta as it comes into the market has usually a brown colour, which, however, does not belong to the pure gum, but is due to a trace of colouring derived from the bark; in some specimens the colour is dirty-white or pinkish, but the pure gum is really colourless. After being kept in the air for some time, the gum changes spontaneously to a brittle resin; this change does not occur if light be excluded, nor is the gum changed by light if air be excluded. Under water it is quite stable, whether the water be fresh or salt. It is found, too, that specimens differ in their power of withstanding the action of the air, and it is believed that the purer the Gutta the better it will resist the action of the air. It is found, indeed, that pure Gutta is only slightly attacked even after a very long exposure to light and air."

"In what is usually termed "Gutta percha" three distinct chemical substances are to be found. On boiling the gum with absolute alcohol a quantity of resinous matter is dissolved, varying with the specimen of Gutta employed. Even the purest gum in the market yields some 18 to 20 per cent. of its weight to boiling alcohol; and only what is left can be considered to be the chemically pure compound. Of worse vatieties of gum, 40 or even 50 per cent. may be thus dissolved. These dissolved resins, although possessed of good insulating properties, cause the Gutta to deteriorate very rapidly if they are present in large amount; it becomes friable and easily disintegrated owing to oxidation. It is their presence in poor qualities of Gutta which renders them unsuitable for telegraphic purposes. But up to 18 or 20 per cent, they do not appear to act injuriously. The resins are named "albane" and "fluavile" respectively; the former, when quite pure, forms white crystals, the latter is a yellow gum. Both appear to be products of oxidation of the pure Gutta, albane containing twice as much oxygen as fluavile. Oudemans gives the formula of albane as $C_{20}H_{22}O_2$, and that of fluavile as $C_{20}H_{22}O$. But the chemical nature of these bodies, including Gutta-percha, has hardly been explored."

"M. Serullas has been led to devise a method of extracting these mixed gums from the leaves, instead of from the trunk of the Isonandra Gutta-percha. This tree used formerly to flourish in the Malay Peninsula in the neighbourhood of Singapore, but until it was re-discovered in 1887 by M. Serullas, it had not been utilised as a source of Gutta for thirty years, and it was supposed to have become extinct. It is the product of this tree which M. Serullas says is best adapted for telegraphic purposes, for it yields gums containing the highest percentage of pure Gutta, mixed with the smallest proportion of albane and fluavile."

"In the best Gutta, the following are the proportions of these constituents:—

Pure Gutta-percha..	.. 75 to 82	per cent
Albane	.. 19 ,, 14	,,
Fluavile	.. 6 ,, 4	,,

"The process of extracting Gutta-percha from the leaves is an exceedingly advantageous one. To quote from the *Sarawak Gazette*, of the month of April, 1895:—"A tree of twenty-five to thirty years old yields one catty (one and one-third lb.) of pure dry Gutta, the same amount can be obtained by two pluckings of the leaves." The *Gazette* goes on to say that the stumps of trees which have previously been felled have now become covered with shoots, bearing rich crops of leaves; and that M. Hourant has induced the natives to collect these leaves, and that they are now exported in considerable quantity."

"M. Serullas states that a tree thirty years old yields 25 to 30 kilograms (55 to 66 lb.) of green leaves, or about 11 kilograms of dried leaves (24 lb.), from which it is possible to extract, by methods to be described, no less than 1,000 to 1,100 grams (over 2 lb.) of Gutta-percha, while the felled tree yields only 365 grams as a maximum. It would thus require that a tree should yield only 7 kilograms of fresh leaves per annum in order to give as large a supply as the whole tree felled, and with much less expenditure of labour."

"It now remains to describe the method of extracting the Gutta-percha from the leaves. The process is due to M. Serullas.

"The leaves, either fresh or dry, contain Gutta-percha. The process of drying, whether artifial or natural makes no difference to the percentage of Gutta, if the latter be reckoned on the dry leaves. The leaves, after being dried, are ground to a fine powder, and then mixed with one-tenth of their weight of caustic soda dissolved in water, and heated to boiling, or indeed digested under a slightly increased pressure. The liquor turns dark brown in colour, owing to the solution of a brown colouring matter, to which the Gutta-percha which usually comes into commerce owes its colour. The weight of the leaves, and also their bulk, is materially decreased by this process. The power is then dried by heating to 212°F.; a solvent is added, in a closed vessel, so as to hinder loss by evaporation. The mixture is heated so as to effect the solution of the Gutta-percha more quickly. The mixture is placed in a filter press, and the solvent is separated as completely as possible. The residue of leaves is washed with fresh solvent so as to extract the whole of the Gutta. The solution is of a greenish-brown colour, owing to the solvent dissolving out some chlorophyll—the colouring matter of leaves. As some solvent remains adhering to the powdered leaves, a current of steam is driven through this residue, which carries off the solvent and permits of its recovery. The extract is next placed in a still, and the solvent is partly removed by distillation, the pressure being somewhat reduced, so as to cause its boil at a temperature lower than that of boiling water. The concentrated extract is then run into a tank and mixed with twice its bulk of a volatile liquid. On mixing this liquid, which is done in a closed tank, there is produced a flaky or "raggy" precipitate of Gutta-percha. This precipitate is filtered off again by means of a filter press and the mixed liquids are run into a retort where they are submitted to distillation and are thus separated.

"The cakes of Gutta-percha from the filter-press are dried at a low temperature; they are then heated so as to soften them, and in presence of water they are moulded into lumps."

"The process is thus seen to be a very simple one. The products are easily prepared, and there is no loss except the unavoidable one, which always occurs when any substance is put through a round, and which is unlikely to be considerable."

"The next qnestion is as regards the yield of Gutta-percha from the leaves and twigs. The following table is extracted from the valuable work on "Caontchouc and Gutta-percba," by Seeligmann, Lamy, Torrilhon, and Falconnet, published by Britach, of Paris, 1896:—

"Old dry wood ..	1C	per cent
"	9·15	"
'Dry twigs	10·20	"
"	10·50	"
'Dry leaves.. ..	10·02	"
" imperfectly dried	9·06	"
" imported in water	10·05	"
" " "	9·00	"

"I have myself extracted Gntta from the leaves of the tree, by the process of Serullas, some six or seven times. Even on a small scale, where the difficulties of extraction, filtration, &c., are much more considerable than on a larger, I have obtained a theoretical yield. The following is a typical analysis of a sample of leaves, chosen at random from among many:—"

Water in the naturally dried leaves	19·92	per cent.
Extractive matter removed by caustic soda	55·00	"
Gutta, reckoned on the thoroughly dried leaves	9·61	"

"The statements made by M. Serullas are therefore thoroughly borne out."

The following letter from the Director, Gardens and Forest Department, Straits Settlement, to the Director, Royal Gardens, Kew, which is printed in the Kew Bulletin for May and June 1897, gives a somewhat different account of the process. "I have just been to inspect the little factory where Mr. Arnaud makes his gutta-percha. Serullas has gone back to Paris with endless patents of different kinds, and Mr. Arnaud alone keeps up the business. The leaves are imported in sacks dry, from Borneo and Johore. Most of the trees are overcut in Singapore, and there are no more leaves left, I hear. The leaves and twigs cost four dollars and half a picul (133 lb). They are then put, damped with hot water, into a rolling machine, two rollers working 'against each other, which grind them to powder. The powder is thrown into tanks of water and shaken about. The gutta floats in the form of a green mealy-looking stuff, is lifted out by fine copper gauze nets, put in warm water and pressed into moulds. I have samples of the gutta as it comes from the leaves, and the pressed out finished article. It is really a very curious little manufactory. I do not know how long it will last, on account of the difficulty of procuring leaves, which must, I think, sooner or latter stop the trade—*The Indian Forester.*

PRACTICAL EXPERIENCE IN LEGUMINOUS MANURING.

Dear Sir,—In *P.O.* of 15th August you pnblished some experiments of mine in Leguminous mauuring; and as "Wynaad Bean" in *P.O.*, 9th January, asks that those who have tried the "Legume cult" should publish their experiences, I give you a few notes of what mine have been since August.

In my former letter I made mention of a 12-acre field manured in August and September 1895. The crop was small and I now consider the manuring was done too late, but at present time the tress are looking well and with a good spike. In June—July last year I applied "E. Lithosperma" cuttings to some other portions, and in three months the effect of the manuring was most marked, the trees having made a fine growth. They are coutinuing to look well and have an abundance of healthy spike. In October I manured another portion and the trees now show the effect of the manure by a nice growth of wood and leaves. The wood will of course not ripen to bear crop, and my experiments show the best time for applying Leguminons manures is not later than July. Their action is so quick that by applying them you get a wood for next year and help your tree through leaf disease.

I last year also manured with both Fish and Cattle manure, and before comparing results I might mention the cost to me of each manure. To cut and apply a good armful of "E. Lithosperma" cost 2 pies per tree. Fish applied at about 1 ton per acre cost 6 pies per tree. Cattle manure two baskets to a tree cost 1 anna per tree. Perhaps I did not manufacture my cattle manure as cheaply as it should have been done, and in calculating the cost I have taken cattle-keeper's pay and cost of applying. The fish was applied in May and the result is much the same as the "E. Litbosperma" manuring. The cattle manure was applied in June and so far the trees show very little appearance of having been manured and the benefit will come next year. The great point in "E. Lithosperma" manuring is its quick effect which proves that all the plant food constituents are in a solnble form and can immediately be taken hold of by the coffee. Those who don't know "E. Litbosperma" would be astonished at its quick growth, and when once established the amount of cutting it will stand. Albizzias are not in it with "E. Lithospera" for growth. The wood is extremely soft, almost pithy, and if instead of the loppings being buried they are left on the g ound, they decay and are eaten up by whiteants in a few months, thus improving the soil and feeding the whiteants. While on this point, I believe a remedy for whiteants in tea would be to place a quick-growing Leguminous tree, keep it lopped so that its shade should not interfere with the tea flushing. The loppings would feed the whiteants and they would not then trouble about the tea and the nodules on the Legumnious tree would be supplying nitrogen to the tea. Whiteants don't attack tea in a new clearing, at least this is my experience, but only in clearings which have been opened some years and where the tree roots and trunks have all disappeared. The whiteants having nothing to eat, they attack the growing tea.

If confirmation is wanted that planters are on the right attack in using Leguminous manures, I think what native cultivators do is a proof in that direction. In the paddy districts below these hills the price for a bandy load of such Leguminous plants as "Tephrosea purpurea" (Cassia Auriculata) is Rs. 2 and they are carted miles. For cattle dung the price is 4 annas, but this is never carted except from the honse to the field. The native has also found out that Leguminous manures are quick acting and prefers to apply them to this three months' paddy crop rather thas to the six montbs' one.

—*Planting Opinion.* LEGUME.

THE COCOA EPIDEMIC.

I've read it in the pipers,
 I've met it in the street,
It's all abaht the bloomin' 'bus
 From wheel ter gawding-seat;
The sample tin comes rattlin' in
 Your letter-box all dye,
Free—or they'll pye yer fur it, if
 Yer'll tike a tin awye.

Pickshur? Chap drinkin' cocoa.
 Reading? It's always there—
It's cocoa this an' cocoa that
 An' cocoa ev'rywhere;
It spiles the show where'er yer go,
 It's 'ummin' in her 'ead,
Yer 'ole life smells of chorklit, and
 Yer wishes yer was dead.

It's 'ighly chawged with phosphits—
 I do not sye it's not;
It's grite on tonic properties,
 An' touches of the spot.
It is (whichever mike it is)
 The purest and the best,
But cawnt yer sell us sumfink else
 And give that stuff a rest?

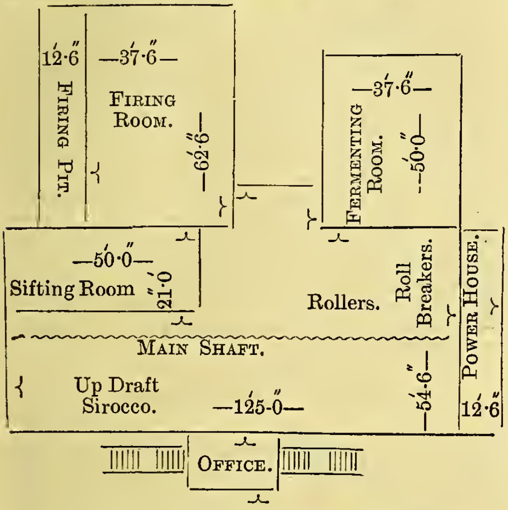
—*Daily Chronicle*, Dec. 4.

A VISIT TO UDAPUSSELLAWA.

THE NEW FACTORY ON RAGALLA ESTATE.

(By a Special Visitor.)

The Ragalla New Factory, or rather the work of levelling, was commenced on November 13th of last year, and tea-making was started in the building on the 10th June of this year and continued ever since. The plan of the Factory may be sketched for the printer as follows:—



Ground Plan. Ragalla Factory.

THE GENERAL DIMENSIONS OF THE FACTORY are—main building, 125 feet by 42 feet, with a 12 feet 6 inch verandah running the full length of the front side. The manager's office is in the centre of this verandah, but built higher and with a storey above it, for weighing the green leaf and as an entrance to the second floor. This entrance is approached by "ladders" from both sides running parallel with the main building. Ordinary stairways have not been adopted: sloping platforms reaching up to the entrance being considered more convenient. One of these "ladders" has ribs of wood to keep the coolies from slipping on wet days, but Mr. Nicol for the sake of the younger pluckers and to make the ascent as easy as possible for them has left the other without these ribs. Behind the main building almost at each end and built at right angles to it are the fermenting and firing rooms with an open court between them. The latter has an open verandah, on the outer side, from which the driers are fired, and is only one storey in height. The fermenting room however has two upper floors, same as the main building, for withering purposes. The fermenting room, unlike the rest of the factory, which has only three feet of brick above the ground level, has been built up with brick for 17 feet on both sides, and on the gable end with 14 feet. This is for the purpose of keeping the room as much as possible from being affected by the direct rays of the sun. The room itself is 50 feet by 37 feet 6 inches, and has a concrete floor. On passing into

THE FERMENTING ROOM

from other parts of the building we at once felt a considerable reduction in temperature, almost equal to the difference between the night and day shade temperature of the locality. By a thermometer placed in the room, we found the temperature was about 64 degrees Fah. This lowering of the temperature is secured by hanging ordinary jute hessian from wires running the full length of the room, about 10 feet above the floor, and saturated with water. These jute hessian screens run down on both sides of the room, having immediately below a drain in the floor covered over with cast iron grating to carry away the surplus water falling from them. Besides these screens, and just in line with them, are two water taps, which are kept running as required to help to reduce the temperature. Practical tea planters will understand the reason for the moderation of the temperature while the fermenting operation is proceeding. The volatile and delicate

ESSENTIAL OILS OF TEA,

which, of course, give character to the commercial article readily evaporate from the newly rolled leaf. How to retain the essential properties of the leaf during the process of manufacture is the crux of tea-making, and perhaps the higher temperature at which low-country tea is gathered and manufactured may partly account for its inferior flavour! Who can say? We knew of one gentleman who was experimenting in this direction, by devising means to fire the tea in a vacuum! We have never heard with what result. This point, however, opens up the whole question of tea manufacture, and it is here where, perhaps, an expert chemist might score. In any case, the advantages of cool rolling and cooler fermenting is now widely recognized, although, perhaps, the practical application of the knowledge is not so widely effected owing, in many cases, to want of accommodation.

THE FIRING-ROOM

is 62 feet 6 inches by 37 feet 6 inches, and is fitted with an ample ventilator or lantern in the roof. The heated air can be directed into the withering-floor, by ducts which can be operated to supply either the one or the two floors to help the withering process. A new paragon drier fired, as already stated, from the verandah as well as a down draft sirocco, is installed in the firing-room. Both are driven from the main shaft by a counter shaft on to a short secondary shaft let through the wall on a level with the floor, which then drives the shaft in the firing-room. The paragon was in operation when we visited the factory, and on entering the room, the sweetest scented air we remember having ever experienced in a tea factory greeted our olefactory nerves, and, we could not help expressing our delight. It was more like going into a confectioner's shop with its delicate intermixture of scents! Here were the essential oils from the tea dissipating under the influence of the heat of the paragon, and which if retained might add a penny or twopence to the price of the tea on the market! This paragon is capable of making 400 lb. made Tea per day, and is a beautiful price of machinery in every way.

THE SIFTING ROOM

is a part of the main room partitioned off, close to the Firing Room. All the rooms are partitioned from each other by half glass partitions and large door ways by which access can be got from the main building to any other one direct—verandah connection between the fermenting and firing rooms, 25 feet by 12, feet wide, facilitating access in their case

to each other. The size of the sifting room is 50 feet by 42 feet. The machinery here is a Jackson's "Eureka" sifter, a Jackson's tea cutter and Davidson's tea packer. A 24-inch Blackman's fan is used in the sifting-room to expel the dust, not placed as is usually seen in the generality of sifting-rooms, near the top of the room, but level with the floor. This is its proper position, for the dust tends to fall, and the fan helps it.

THE LEAF-ROLLING ROOM—

the main room of the building is open and spacious, — feet by— feet. The first floor of the building is placed exceptionally high, so that the light of the whole ground floor is as good as could be desired—an important desideratum for facilitating careful manufacture and cleanliness. In this connection, a system of drains, covered with cast iron perforated covers, allows copious washing without any difficulty in getting rid of the water, etc. These drains run below all the rollers, roll breakers, and sifters. In the centre of this room the pillars, which support the second floor are placed sufficiently wide apart to obviate any appearance of crowding or breaking up of the space. There are nine pillars and these support the transverse beams all are 8 inches by 4 inches. Along these pillars run the main shafting for 138 feet varying in diameter from 4 to 2½ inches supported by angle iron brackets; and one useful apparent improvement on the usual arrangement for oiling purposes, is the erection immediately below, of a neatly constructed light staging extending from one end of the shafting to the other. This will be of much value in giving ready access to the bearings for any purpose.

THE MACHINERY

in this room is a Jackson's 32-inch circular "Rapid," a Jacksons square "Rapid," an "Economic," made by Walker, Sons & Co., 2 Michie's Roll Breakers, also made by Walker, Sons & Co., and one up-draft sirocco, for refiring purposes. All the machinery is new, except the square "Rapid" and Davidson's down-draft sirocco. There is provision made for the installation of 10 rollers altogether, and when these are placed it may be easily computed, what the output of this splendid factory will amount to. The rollers will be in two rows on each side of the main shaft and at the end nearest to the turbine, and close to the fermenting room. The sirocco is placed in the verandah, in line with the sifting room. It is sunk 6 feet below the factory floor, and very conveniently placed for refiring the manufactured teas. The whole arrangements of this room gives a feeling of great freedom, and is in every way arranged for the practical, expeditious, and easy handling of large quantities of tea leaf.

At the end of the factory nearest the turbine is an ordinary stair ladder reaching up to the second floor, with another from the second to the third floor at the entrance above the office. On ascending we found ourselves face to face with a thicket of wood shelving. This was the first time we came across the extensive utilization of

WOOD INSTEAD OF THE JUTE HESSIAN TATS

generally in use. It is well-known that leaf gets a better wither up on wood than upon hessian, and full advantage has been taken of this fact in the Ragalla factory. On the second floor of the main building these tats are arranged to allow 2 feet 3 inches space as room to pass down the centre and on both sides, so that easy access is gained to spread the leaf. Above the fermenting room, the tats are full breadth across, 33 feet, leaving room on each side only. The tats are made of pine deal, ⅝ths inch by 7 inch wide, put together to form a width of 3 feet 9 inches, with three inches of a slope. Six inches are left between each shelf, and these are piled up to the ceiling of the third floor, not too much out of reach from the floor. The usual arrangements hold for sending down leaf to the rollers. Each floor has a 48-inch Blackman's fan, so placed as to draw the heated air from the firing room right through both floors. In the whole factory there has been used about 90 tons of wood alone, and this will of itself give some idea of the proportions of this modern and up-to-date factory.

In closing our remarks about this splendidly arranged factory, we may state, that it was built and designed by Messrs. Walker Sons & Co. Ltd., the well-known engineers, &c., of Colombo and Kandy, and everything in connection with the factory reflect of them the highest credit, for the care and finish bestowed on every detail. Mr. Holland Porter, we believe, has been the representative of the firm more immediately concerned with the building since its inception, and it is highly satisfactory evidence of his executive ability and professional skill.

TEA IN DARJEELING.

Nov. 16.

Leaf is still struggling out, but the season is nearly closed. We are, however, all making more tea than is usual at this time of year, on account of the warmer nights. The tea is very flavoury and will sell well in the London market, but these cold-weather-flavoured teas do not seem to be appreciated in Calcutta. The weather has been stormy in the afternoons for the last few days, very black thundery-looking clouds getting up, but they come to nothing and disappear in the evening. We do not want any more rain until Christmas time.—*Planter.*

THE NEW MAP OF THE TEA ESTATES AND DISTRICTS.

AFTER many disappointments and heart-breaking delays, we are at length enabled to offer to the public of Ceylon—and especially to the planters and merchants—the long-talked of, map of the Tea Districts, as compiled under our direction, and lithographed at one of the first London establishments. We are very far from claiming "perfection" for our map—indeed we are conscious that there must be not a few errors, most of which are attributable to our having had no opportunity of verifying the "proofs" or supplying the latest corrections as we should have done, had we been near to the lithographers. Still we trust the map will be found a fairly accurate and useful production—at any rate a great improvement on its predecessor of 1875. The execution by the printers has been admirable, we think—the printing being very clear and attractive.

If a second edition should be called for, we may hope to make any specially needful emendations.

THE AGRICULTURAL SCHOOL: A PRIZE STUDENT FROM THE STRAITS.

MR. A. R. Jeremiah, who was awarded more than one prize and a certificate of merit at the late distribution of prizes at the School of Agriculture, came over from the Straits Settlements

with the special object of joining the School. He has gone through the full course of study extending over two years with credit; the only pity being that he could not have been shown the cultivation of Ceylon products as carried on, on our estates, the Government making no provision for taking the Agricultural students on tour.

CACAO DISEASE AND SHADE.

Dec. 3.

PLANTING NOTES FROM MATALE WEST.

Pluckers will be very busy again. This season has been a good one for cardamoms, and with the high price we are having, owners of cardamom fields will have a happy time of it. I wish the same could be said for those having tea, cinnamon and coconuts.

Mr. Willis and the expert's opinion on the cacao disease are interesting reading, but the opinion that heavy shade might be one of the causes, does not seem to hold good, when one sees the growth of cacao on Marakona, where the shade is more dense, than any property I know of. Passing by train through about two or three miles of this property, one does not see for miles, a tree diseased, while higher up and lower down, a good many trees are diseased. A good number of planters passing this property were of opinon that the soil on the estate was too poor, as cacao required a rich deep soil, but luckily there was the superintendent, Mr. Holloway, who knew what he was about, and allowed weeds to grow, thus saving wash. Latterly when the estate had a fair amount of shade, the weeds were cut down, and mixed with lime and buried, thus giving the trees a good manuring at little cost, and making the soil richer than when first planted.

If this estate was kept clean from the commencement of planting, the soil exposed till the shade came on would have hardened, and with the rains, there would have been a great deal of wash.

CHOCOLATE CULTURE IN NICARAGUA AND MEXICO.

BY ROWLAND W. CARTER.

The visitor to Nicaragua, will not be long in the country before an opportunity to 'sample' Tiste will present itself. It is a preparation of powdered cacao beans, sugar, maize-flour, and water, and may be called the national beverage. Europeans, accustomed to the chocolate of the French and Italian cafes, do not at first care for it, but they soon recognise its virtues. To the poer peon it is often both food and drink, and with a jicara gourd more or less full of it on his back, he will toil contentedly for six or eight hours, asking no other nourishment.

Long before the conquest, a decoction of which the cacao bean formed the principal ingredient was held in the highest favour in Mexico and Central America. The Aztecs called this drink *chocolatl*, and every tribe they subjugated had to bring a certain number of bags of cacao as tribute to the Emperor. The chocolate of those savage conquerors was flavoured with vanilla, even as ours is today, but other spices, some of which have not been identified, were used to improve this 'food for a god.'

EARTHQUAKES GALORE.

I am not likely to forget the catastrophe which led to my first introduction to *Theobroma Cacao* as cultivated on a large scale in Nicaragua, for it was nothing less than an earthquake. Seismic disturbances are common in Central America : and the volcanoes on the flag of Nicaragua are not without meaning. It is a land of volcanoes, and the sonorous names which the Indians bestowed still cling to many of them, telling, as plainly as sounds can, of the awe and dread the ancient people held them in when they were not slumbering, as now, but active and malevolent. Omotepe—Mombacho—Momotombo—the names suggest a rumbling and roaring, fire, and a lava flood that nothing could withstand.

Granada, where I was dwelling in September 1890, stands at the foot of Mombacho. At one time it was the capital, but the jealousy of Leon has made Managua the seat of government. Granada, indeed, has never recovered from the Filibuster War, when General Henningsen almost razed it to the ground. Before the Revolution, and since, it was a city of palaces. Now it is more or less ruinous.

On Sunday, the second day of that eventful September, I was sitting in the patio, or court-yard, of the house in which I resided, when I suddenly became aware of a muffled roar, not unlike distant thunder, but apparently proceeding from the ground, which quivered under my chair. My companions instantly sprang to their feet.

'Tremblor—Tremblor!' they shouted, and ran through the wide portiere in to the street. I followed. They, and hundreds more, men, women, and children, were racing towards the plaza, or great square. Hysterical shrieks, cries, and shouts filled the air, which was so thick with dust that I could see no better than in a London fog. The plaza was no great distance, but the vibrating ground made my steps so uncertain that it seemed many minutes before I joined the terrified throng already gathered in that open, and therefore comparatively safe place of refuge. Some, struck down by falling tiles and bricks, never reached it, but the casualties were few.

The roar and the quivering died away, and after a while the people, thinking the danger at an end, began to return to their homes. But I had scarcely reached the patio that I had left so hurriedly when another shock, sharp and sudden, sent us all flying to the plaza again. This was followed at a brief interval by a third and a fourth, each more violent than the preceding one. Stone houses rocked to and fro like poplars in a hurricane; adobe walls cracked and fell; roofs seemed to be stripped off entire; but the huts of the poor, built of timber, with walls of plastered canes, generally escaped. The crash of falling masonry, clanging of bells in the church towers, howling of dogs, cries of children and lamentations of their parents, made an uproar almost indescribable.

A few priests of Spanish blood ran about endeavouring to calm the people; but many cried that it was the Day of Judgment, while others declared that it was heaven's punishment on the inhabitants for visiting the theatre, where an operatic company had been playing *La Mascota*.

The shocks continued at intervals for twenty-eight days—four weeks of panic, desolation, and distress. Those who had haciendas in the country fled thither, leaving their city houses at the mercy of thieves, whom even earthquakes could not restrain from pillage. The government ran free trains to places of safety, so that long before the shocks came to an end Granada was comparatively deserted. Those who remained ate and slept in the streets. I, almost a stranger in a strange land, did not at first know where to go until I bethought myself that I had an invitation from the manageress to visit the 'Valle Menier' cacao estate, situated near Nandaime, about half-way between Granada and Rivas. Thither I went, leaving my lares and penates in the care of the earthquakes, with small hope of seeing them again.

A LARGE CACAO PLANTATION.

The 'Valle Menier' plantation is by far the largest and best-managed in Nicaragua, and, as its name will indicate, it is the source of the famous 'Chocolate Menier,' so largely consumed in France and England. The owners, Messrs. Menier Brothers, of Paris, culivate the cacao in a thoroughly

systematic way, and in consequence they have no rivals in Nicaragua, and no superiors anywhere—that is, as regards the quality of their product. The careless, unstudied methods of the native haciendados are scorned at 'Valle Menier,' where the very best machinery available is in use, and nothing spared in order to attain perfection.

Of course the earthquakes, of which Granada seemed to be the centre, were felt in the valley which the Brothers Menier have made so productive, and there was great excitement during my stay; still, I saw enough to convince me that a cacao plantation, carefully and systematically managed, is a very profitable investment. And this I think I shall be able to show.

Theobroma Cacao is a tree of moderate size, averaging when in a wild state from twenty to thirty feet in height. Its deep green oblong leaves vary in length from eight to twelve inches, and are generally about three inches broad. The light red or pale yellow flowers, growing in tufts at the extremity of the branches, are small. On these falling, the gourd or lemon-shaped pod appears. It is about eight inches long by three in diameter, and has a thick, tough rind, light green at first, then pale red, and eventually reddish purple. The pod contains from thirty to forty seeds, closely packed in white pulp. These seeds after being fermented, rubbed, and cured, constitute cocoa; if they are merely broken up, they are known as cocoa nibs. The soluble cocoa familiar to all is composed of the seeds or beans finely ground and mixed with starch. Chocolate is the same thing, but made up into a paste and flavoured.

There are many varieties of the cacao tree. The Tobasco cacao of the Atlantic slopes of Central Ameria, and the famous Socunusco cacao of the Pacific shore are obtained from *Theobroma angustifolia*. This is supposed to be the best cacao known, and very little of it finds its way to foreign markets. In addition to Mexico, Central America, and many of the West India Islands, cacao of excellent quality is obtained from the United States of Colombia, Ecuador, Venezuela, Brazil, Ceylon, Madagascar, the Philippine Islands, &c. In British Honduras, *Theobroma Cacao* and *T. angustifolia*, the famous cacao tree of Socunusco, both grow wild. Mr. Morris, now the assistant-director of Kew Gardens, saw a number of them on the banks of the Rio Grande, 'with their stems covered with flowers, and often loaded with fruit,' growing 'under the shade of large overhanging trees in deep soil, and in rather moist situations.' British Honduras, therefore, where the most valuable species are indigenous, would appear to be the most favourable of our colonies for a cacao plantation.

PRACTICAL HINTS.

In choosing land an elevation of from three hundred to six hundred feet is desirable: the plantation must be sheltered from the winds and the direct influences of the sea-breezes. The cacao will thrive close to the sea-shore but the site must be sheltered. The well-drained but moist alluvial lands in the river-valleys afford the best soil and situation.

At the 'Valle Menier' in Nicaragua, when I received my first lesson in cacao cultivation, only seedlings, propagated in nurseries, are planted out. In other places the method known as planting 'at stake,' that is, propagating on the plantation, is sometimes adopted but this I cannot recommend. When the plantation is intended to be made on lands covered with virgin forest, the first step is clearing a space for the nursery. When the trees and undergrowth have been removed, the soil should be hoed and raked, and all weeds carefully pulled up. For planting, the best-looking pods, not over-ripe, should be chosen. Those known in Mexico as 'hechas' are generally preferred. They are light-coloured and solid, and distinguished from the 'viches' by the seeds not rattling inside. A light tap with a knife handle is the test usually employed.

The seeds should be planted eight inches apart and one inch deep in small furrows, covered with loose, fine mould and banana leaves, and watered lightly every morning and evening for a fortnight, when the seedlings will begin to show above ground. The banana leaves should then be removed, and a roof of palm or other large leaves, raised on sticks, constructed to shield the young cacaos from the sun. This done, the planter may leave them and turn his attention to the land where they will be planted out.

The close of the rainy season is the proper time to begin clearing. This varies according to locality, but in the Rivas district the winter or rainy season—'Invierno,' as the natives call it—commences about the middle of May and ends in the middle of November. In Mexico the rainy season is not over, as a rule, before the end of December. The first step is to mark the valuable timber trees, fell them, and haul them away. The remainder, with the undergrowth, should be cut down, leaving, however, a belt on that side of the plantation which is most exposed to the wind. The branches should be lopped off the trunks, and the whole left a month to dry. When perfectly dry the brushwood and trees should be piled in convenient heaps and burned. It is advisable, however, to sort out such vegetation as will decompose quickly and allow it to rot for use as a fertiliser. When the whole is destroyed by fire, constituents very necessary to enrich the soil are given off and lost.

SHADE.

As the cacao trees require to be shaded from the direct rays of the sun and sheltered from violent winds, it is customary in Nicaragua to leave such trees standing as can be utilised for shade. When more shade is required, cuttings of fast-growing trees called 'Madres de Cacao'—mothers of the cacao—are planted to supply it. The tree generally used for this purpose in Nicaragua is locally known as 'Madera negra.' Various species are used in different places, but the most common perhaps is the Savonetta of Trinidad, supposed to be identical with the 'Madera negra.' As a rule these trees serve no other purpose than to give shade, whereas the banana, planted as a shade-tree, will yield fruit as well. I recommend either the banana or *Castilloa elastica*, the india-rubber tree, for this purpose, and give the preference to the latter, as being much more valuable and lasting. It would be a good plan to plant bananas first in rows fifteen feet apart, each tree in the row forty-five feet distant from the next. They spring up directly and afford good shade in six months or less. Then rubber and cacao trees should be planted between the bananas, thus forming a composite plantation. The bananas die down after fruiting, but are soon replaced from the same roots. When the rubber trees are big enough to shade the cacao, the banana roots might be grubbed up, leaving the rubber and cacao in possession of the ground. The space occupied by the bananas might then be filled up with rubber, or cacao, as desired, when the trees would be fifteen feet apart. As the *Castilloa elastica* is a deep feeder, and proof against the attacks of insects, it is perhaps the best possible shade-tree. The Castilloas may be tapped in the eighth year, when they will yield, on an average, five pounds of rubber worth two shillings a pound. The quantity of rubber will increase every year for a certain period, and continue for from twenty to thirty-five years or longer.

PLANTING OUT.

To return to the cacao seedlings. When twelve months old they will be about two feet high and ready for transplanting. This should be done at the beginning of the rainy season. Considerable care is necessary. In Mexico the process is as follows: A peon cuts a circle or square round the seedling with a machete, then with a spade lifts up both earth and plant. Another peon stands by with a large leaf, which he wraps round the mass to retain the earth and guard the taproot. Holes two feet square and two feet deep having been dug fifteen feet apart, or that distance from the shade-trees, the young cacaos are carefully placed therein, the holes filled up, and the earth well pressed down. Dried leaves, banana trash, or mixed wood ashes and decomposed vegetable

matter should be placed on the top, and the operation is complete.

At two years old the tree, in good soil, will stand five or six feet high: when seven or eight feet high it will begin to bear, and when ten or twelve feet high it will be in full bearing. This will take place in from the fourth to the seventh year, according to situation. In the meantime considerable attention is necessary. Twice in each year the land should be weeded, and the trees must be carefully pruned.

PRUNING.

With regard to pruning I quote from a valuable report on the productions of Mexico by Sir Henry Dering: 'As the pods are borne on the larger branches, the principle is to develop such branches and see that they are not covered up by foliage and small twigs. A typical cacao tree should have one stem, giving off at a few feet from the ground three to five branches, which spread in an open manner and are free from leaves except at the top; thus the leaves shade the open inner portion without interfering with a free circulation of the air. If the young plants throw out more than one main stem, the surplus ones must be pruned off when the moon is on the wane; and after the lateral branches are formed, no upward prolongation of the stem must be allowed to grow. If the tree be left unpruned, these upward growing branches will shoot from the stem just below the laterals in the form of suckers, and to leave them on is to cause the strength to be taken from the fruitful laterals, as well as to allow the trees to run up, perhaps for thirty feet or more, thereby causing much trouble in picking the pods. When the suckers are pruned off, fresh ones will grow in a short time, so that the trees will require frequent attention until they are mature, when the tendency to throw out suckers will be stopped.'

After the flowers have fallen a small pod appears like that of the Chile pepper, maturing in three or four months. The first flowers, however, should not be allowed to produce pods, but should be rubbed off. As the cacao tree blossoms all the year round, the harvest is practically unceasing, but for convenience there are considered to be four harvests, each covering three months. That lasting through April, May, and June is the most abundant. When the pod takes a reddish purple tint it is generally considered to be ripe, but this is definitely ascertained by tapping it with a stick or the knuckles. If it sounds hollow, and the beans are loose, it is gathered.

HARVESTING.

In the harvesting great care is necessary, or the next fruiting bud, which grows close to the pod, may be knocked off, and the branch rendered barren. When the pod is beyond reach the mozo generally uses a curved blade attached to a pole, and with a peculiar twist removes it without damaging the branch. When gathered, the pods are placed in heaps under the trees for twenty-four hours, then carried to the cacao-house and again heaped up. Round the heaps a number of men, women and children take their places. With their machetes the men open the pods, which are then passed to the women and children, who remove the beans.

CURING.

On large plantations, such as the Valle 'Menier,' the beans are then carried to the 'sweating-house,' heaped together, covered with banana or plantain-leaves, and allowed to ferment for from four to six days, according to the season and temperature. To insure thorough fermentation, the heaps are occasionally levelled and re-made. Unless this is done the beans in the centre of the heaps will turn black. When sufficiently fermented they are placed on shallow wooden trays and exposed to the sun to dry. Sometimes 'Barbecues,' or yards with a flooring of cement, are utilised. But whether dried in the trays or on a floor, the beans should be protected by a moveable roof of canvas running on rollers, or a temporary thatch of plantain or palm leaves. When the sun is out the roof is rolled back and the beans are exposed: during rain at nights the roof is rolled over the trays or the yard as the case may be. This process is continued until the thin skin covering the beans becomes brittle and may be easily removed.

As the drying is very important, I quote again from Sir H. Dering's report:

'Where they are dried in yards the sweated beans are spread out thinly, well rubbed, and exposed to the sun in the morning, and at mid-day put back in the sweating-house to undergo another partial fermentation, for if they be dried straight off they will deteriorate in value. A peon must turn them over once in a while during the day, so as to expose the whole seed, otherwise one side only will become red and the other black. The second day they are kept longer in the sun, and the third day they remain out as long as the sun lasts. They are put out on succeeding days until they are thoroughly dry, which is told by their producing a crackling sensation when pressed between the thumb and forefinger, or when the outer skin breaks off easily. To brighten the colour to a deeper red, the beans are washed in a 33 per cent. solution of lemon or sour orange juice. Sometimes the cacao is clayed—that is, sprinkled with red clay that has been dried and pulverised—immediately after they have been removed from the "sweating-house."

Claying, however, is not adviseable, as the buyer can tell immediately when the natural colour of the beans has been artificially heightened. Beans of a deep-red hue sell for the best price, but this should be attained by silkful curing, and not by giving them a coat of clay. The wash of lemon or orange juice is quite harmless. When perfectly dry the beans may be placed in sacks and sent to market.

CROPS, PRICES, AND PROFITS.

The yield of a mature cacao tree varies considerably. In Nicaragua it ranges from 3 to 8 lb., and I think 6 lb. per tree may be taken as a fair average. Sir Henry Dering, referring to Mexico, states:

'Generally one can reckon on 50 pods per tree a year, each of which will produce from 30 to 40 beans, and 250 dried beans will weigh one pound.' Taking the lowest number of beans per pod, namely, 30, this would give 6 lb. per tree. The trees, if carefully, cultivated, will continue in bearing for from 22 to 25 years.

The price varies considerably. Cacao beans sometimes sell for 50 shillings per cwt., and at other times for as much as 130 shillings. Fair qualities may be said to average 75 shillings, but in estimating cost and profit I propose to base my calculations on the low average price of 65 shillings per cwt.

Sir Henry Dering estimates the cost of cultivation at £8, 8s. per acre, which includes the price of the land and all expenses incidental to forming a plantation. In order to be on the safe side, I estimate the cost at a shilling per tree to the end of the sixth year, so that an acre, planted with 193 trees, will have cost £9, 13s. The expenses of harvesting and curing Sir H. Dering places at 2¼d. per lb., which is very fair. The following figures will show the cost and profit of one acre of land planted with cacao trees 15 feet apart:

Dr.		*Cr.*	
Cultivation, including cost of land, clearing &c., for the term of six years, at 1s. per treo	£9 13 0	Yield of one acre, planted with 193 trees, bearing 6 lb., each, or 1158 lb,, at 65s. per cwt.	£33 12 0
ng and ng for of 1158 acao, at r lb.	10 17 1	Profit, £13, 1s. 11d.	
Bla	13 1 11		
	£33 12 0		

Each successive year, for twenty years or more the plantation would yield a crop of the same, or

greater value, whilst the only expenses beyond those of harvesting would be the cost of two annual weedings, pruning, and occasionally replacing a tree. These £5 per acre would more than cover. The profit, therefore, for the seventh and succeeding years would be £17, 14s. 11d., or 87 per cent. on the original capital expenditure of £20, 10s. 1d. per acre. The figures given by Sir Henry Dering show a cost per acre to the sixth year of £20, 13s., and a net annual profit of £53, but his calculations are based on 300 trees to the acre, which, in my opinion, is too many. Enough has been written, however, to show that chocolate growing is a very paying occupation.—*From* "*Chamber's Journal*," Oct. 23.

AGRI-HORTICULTURAL AND COTTAGE SHOWS.

Much credit is due to the Executive Commitee and office-bearers connected with the late Agri-Horticultural Show at Nuwara Eliya—one of the most successful and useful in every way ever held in the island. The rock on which such Shows usually split is the financial one; but it will be seen by the accounts given elsewhere, how well matters have been managed this time, and how the Committee have been able to supplement with medals and votes where merit called for the same. The only omission we can observe in this part of the business has reference to Mr. Nock who, we suppose, more than any other individual, laboured for the success of the Show. We should have liked to see a gift or at least a special medal sent his way. The proposal to follow with a Cottage Show and to maintain such Shows once a year, is a most commendable one and has our hearty support. Still more important and suggestive is the further proposal included in our Special Telegram on Saturday, and reported more in detail elsewhere, and we sincerely trust that His Excellency the Governor may see his way to support the appeal for a PERMANENT ASSOCIATION to arrange for AGRI-HORTICULTURAL SHOWS at intervals at different stations throughout the island. Our readers are aware that an annual SHOW, FAIR AND SPORTS specially for the benefit of native agriculturists in connection with each Kachcheri, has long been advocated by us as a most desirable innovation. But we are aware of the difficulties in the way. Most of these would be removed if there were an Association with permanent plant which could be utilised for any station where a Show was projected. Such an Association with a fixed Committee and Rules could make the arrangements a much easier matter for the Provincial or District Agent, and there would then be no chance of one Show clashing with another. Shows of the extent meditated if held once in three years at most stations, could be supplemented in between with purely native gatherings in the shape of a Fair and Athletic Sports under the patronage and guidance of the "Agent-Mahatmaya." An over-true complaint of the natives is that the British Government which has given them Law Courts, Police Stations, and Arrack Taverns, has done nothing for the innocent amusement of the people in fixing Holidays with attendant Sports (free of gambling!) and if possible Shows of Stock and Produce, while the requisite Fair would be sure to come in of itself.

RICE FROM SOUTHERN INDIA.

The thanks of his brother planters are certainly due to Mr. James Ryan for his exertions to make all clear about getting rice readily from Southern India. Unfortunately, to all appearances, we are on the eve of something like a Famine in the Madras Presidency counterbalanced by abundant—even superabundant—crops in Bengal and Burmah, whence therefore, it is evident our wants are shortly bound to be supplied. Madras Presidency, we fear, will require all the rice grown within its borders for some time; and indeed we may anticipate a rush of coolies to Ceylon early next year if the scarcity extends—so that a plentiful and cheap supply of labour should be the rule in the Spring of 1898.

THE SOY BEANS.

The Madras Government sends us a paper showing how Surgeon-Lieutenant-Colonel W. G. King, M.B., C.M., D.P.H., Sanitary Commissioner for Madras, addressing the District Medical and Sanitary Officer, Vizagapatam, the Deputy Collector of Bellary and the Tahsildar of Saidapet, on 8th September 1897, says:—

I have the honour to forward herewith oz. of soy beans, with the request that you will kindly cause them to be sown in any suitable place where they can be carefully watched as to progress of growth, and that you will oblige me by stating the nature and amount of crop obtained and whether you think the beans can be grown successfully in your district from the experience so obtained. I need not remind you that the "Soy bean" is probably the most nutritious form of readily assimilable pulse at present known, and that, should it prove possible to introduce it widely in this Presidency, it would prove of great advantage in jail administration and also to the poorer classes generally. The enclosed extract from "Church" will show you the method of cultivation and the various use to which both the seed and the stalk can be put.

2. As this is a suitable period of the year for sowing, I trust you will oblige by taking action in the matter as soon as the seeds are received. In asking you to kindly undertake the experiment, I may state that it was only after long and persistent search in India and Burma that I have ultimately obtained specimen.

THE SOY BEAN.—This crop is generally grown by itself; the seeds are sown from June to September; the harvesting takes place between November and January. It is consequently a kharif crop. The seeds should be placed at a depth not exceeding 1 to 1½ inch; 18 plants may be left, after weeding and thinning, to the square yard. A peaty soil, or one rich in organic matter, suits the plant best; a calcareous soil is also favourable to its growth. Sulphate of potash is a good manure; nitrogen may be supplied either as nitrate of soda, or, in the case of soils poor in organic matter, in the form of rape or mustard cake, but it is rarely needed, while large applications of nitrogenous manure exert a distinctly injurious effect upon the yield of beans. So far as we know, this very important, vigorous and productive pulse is not attacked by any insect or parasitic fungus .... That composition entitles the soy bean to the highest place, even amongst the pulses, as a food capable of supplementing the deficiencies of rice and of other eminently starchy grains. Very few vegetable products are so rich as this bean at once in albuminoids and in fat or oil, the former constituent amounting on the average to 35 per cent, and the latter to 19 .... In China and Japan three preparations are extensively made from the soy bean. Soy sauce is the best known of these, but more important are the soy or bean cheeses, and a kind of paste. The beans are sometimes pressed for the sake of the oil they yield; the residual cake forms an extremely rich cattle food, containing as it does 40 per cent. of flesh-formers and 7 per cent. of oil. The soy bean may also be grown as a fodder plant. If cut just when the pods are fully formed, it makes an excellent hay, superior to that of the lentil.

COFFEE IN MEXICO.

In continuation of our remarks yesterday, we may add that it will be interesting to Ceylon and Indian coffee planters and ex-planters to hear of the great interest which is at present being taken by "Britishers" in coffee cultivation in Mexico. In that country the coffee industry is now making rapid strides and coming well to the front. It has been known for some years that there existed in Mexico vast tracts of the finest coffee land, but it is of comparatively recent date only that the exploitation of coffee in that country has been taken up in a scientific and well-organised manner.

The recent visit of experienced Ceylon planters did much to open the eyes of both London merchants and Ceylon planters in London, to the immense advantages that Mexico offers for the cultivation of the bean; and during the last few months an influential Syndicate has been formed of merchants and planters in London, with a view of acquiring and working some of the promising plantations and of opening up new lands for coffee. Not three but four experienced Ceylon men, viz., Messrs. John Clark, Cecil O. Naftel, J. G. Fort and P. F. Hadow are now in Mexico on behalf of the Syndicate and should their Reports, as it is expected they will, confirm those already in the hands of the Syndicate, it looks as if a very big thing were likely to come out of it. Possibly this may prove the finest chance that Ceylon planters have yet had to take up their old favorite industry in a new country and those first in the field will no doubt obtain the pick of the land.

We understand that the name of the Syndicate is the "MEXICO PRODUCE & ESTATES SYNDICATE, LIMITED," of 138, Winchester House, London, E.C., and any Ceylon man interested in the matter cannot be wrong in placing himself in communication with the Secretary.

CEYLON TEA IN AMERICA.

The "tea campaign" of Ceylon and Indian planters in the United States, is certainly beginning to tell when Messrs. Gow, Wilson and Stanton can send us such satisfactory figures as those which are appended to their letter elsewhere. It will be observed that during the nine months up to 30th September last, the demand for Ceylon tea has increased by 50 per cent over the quantity taken for the same period of 1896. The Rood Lane firm sum up the case for both Ceylon and Indian tea as follows:—

"The use of Indian and Ceylon tea in North America shows decided progress, being 8,464,749 lb. taken during the last nine months, against 5,562,994 lb. during the same period of 1896. This increase having occurred in face of somewhat obstructive legislation, the development is very gratifying. As these restrictions are likely to be removed there is reason to believe that the use of British grown tea will become even more general."

For the whole year 1897, we may hope that the total of Ceylon tea taken will not fall much short of 6 million lb., and of Indian, 5 million or 11 million lb. of both and the improvement ought to go on steadily year by year now, seeing that the taste is spreading for sound teas among the people of the United States.

COFFEE PLANTING IN EAST JAVA: "WHY GO TO MEXICO?"

This is the question asked of us today with reference to our article on Mexico. "Why should young planters in Ceylon with some capital go across the seas to far away Mexico, when there is far better scope and encouragement near at hand in East Java?" We have had the pleasure, through Mr. Fairweather of Yataderia, of meeting the pioneer of coffee in East Java. This is Mr. Frank Adam with 23 years' experience of Java and the Straits and who has just come from Burmah on a month's visit to the Ceylon planting districts. Mr. Adam goes to Yataderia tomorrow, and afterwards he will visit his cousin, Mr. Mooyaart-Denison in Kandapola, and Messrs. F. and W. Stewart Taylor, Passara, and see some of the estates in Haputale, Passara, &c. Mr. Adam first thought of coffee in Banjoewanjie, East Java, in 1890, but he was scoffed and laughed at for going so far afield, to a district separated by 30 miles of "wilderness" from the occupied parts of the island. However he persevered, and the result now is some of the finest coffee plantations seen in Java (*notably that of Glen Nevis*), in the opinion of competent Ceylon and Java men; a capital road all the way, apart from steamer communication; and while labour was 90 cents (of a guilder) per man per day, to begin with, it is now down to 45 to 50 cents or 10d per day. Mr. Adam would fain see more Ceylon men turn their attention to East Java; and it must indeed be a certain proof of labour being abundant, that we find Mr. Fairweather and his partners seconding this proposition! For, what has been the cry for years in Ceylon; but that "a good thing is no sooner found than it is spoilt by too many hearing of it." Here, however, we can assure young capitalist-planters that they will be welcomed to East Java and that the advantages in rich land, good labour, easy rent and taxes—nothing to pay for five years and then about 2s 3d per acre rent with 2 per cent tax on produce—seem very decided indeed. We have no doubt that Mr. Adam while in Ceylon will be very glad to give information to any applicant. The Company comprising Messrs. Fairweather and Starey have 4,000 acres land with 1,000 in coffee; while Messrs. Talbot and partners have 300 in coffee out of 1,000 acres. One coffee crop is reported at 5,000 piculs (136 lb. each) of coffee, and that 1,000 of these cover expenses; while the coffee as cured is ranged with "M. P. Ceylon" at 100s per cwt.!

PLANTING NOTES.

RAMIE FIBRE.—Messrs. MacDonald, Boyle & Co., of 39, Victoria Street, S.W., write in reference to a note on "Ramie Fibre," that appeared in these pages recently, that we must have been misinformed. The Midlands Spinning Co., of Long Eaton, have been working Ramie under their process for the past four years, and tons of the yarn have been turned into lace and other materials. —*Gardeners' Chronicle.*

THE EFFECTS OF EARTHQUAKE ON TREES.—Two or three correspondents of *Indian Gardening* says that since the earthquake in June the fruits on their Papaw-trees have not increased in size nor ripened, but remain in the same state as before the earthquake. New growth, however, and a fresh crop of fruit has been produced since the catastrophe, leaving the previously-formed fruit arrested.

OUR RICE TRADE.

Mr. JAMES RYAN writes :—

"*Re* your article 'Our Rice Trade' (4-12-97), Mr. James Gibson does not bother whether Coast Rice arrives in bags of one size or another; but this matter is one which intending purchasers from the Coast must take particular note of. The consolidated rate of the South Indian Railway is the same for a large bag or a small one, provided the weight does not exceed 190 lb. gross, and it is this concession that enables the purchaser to land Rice at Bandarawella *14½ cents per bushel* cheaper than Mr. Gibson's sea-borne Rice."

The experiment of getting rice from Tanjore in the way pointed out is certainly one well worth trying; although we cannot think that the supply will continue available at the low rate while famine prevails in another division of the same Presidency.—Mr. Frank Adam, just come from Burmah, confirms today the report of a large rice crop, and says when he left Rangoon "paddy" was being shipped, he understood, to Tuticorin or Colombo.

CEYLON TEA IN AMERI A.

Writing from New York, 5th November, the Tea Commissioner sends us the following extract from a Metropolitan Journal :—

A DIRECT LINE TO INDIA.

A Regular Service to be Commenced this Month.—A regular direct steamship service between this port and India has just been arranged for, the first sailing being set for November 27th, by the "Sahara," a vessel of 4,089 tons, going via the Suez Canal and taking freight for Aden, Persian Gulf, Bombay, Malabar Coast, Ceylon, Madras and Calcutta. She will be followed by monthly steamers. The new service is of especial interest, inasmuch as it is the first direct regular line to India from New York. Most India business has heretofore been handled via Great Britain and Mediterranean ports, with occasional sailings by tramp vessels. The new line is established with the definite purpose of developing trade, the agents and managers believing that present trade conditions were ripe for the enterprise, and also feeling confident that with regular facilities the trade will increase. The advantages will be especially felt by American manufacturers, who can thus sell on samples, and conduct their business with greater convenience. The outward cargoes will naturally be of a more or less general character, but steel rails and railroad material will figure as one of the most prominent items.

Bucknall Bros. of London are the managers of the new line and Norton & Son, the New York agents.

He adds :—"This cutting from the *Journal of Commerce* here, will interest your readers. It should also benefit the Colombo market, as our kith and kin here dearly love direct trading, and *hate* everything that looks like supporting London trade. The recent rise in the tea market in Colombo and London, has made importers here very angry. They were beginning to think Ceylons were permanently down to the level of common Chinas. It is the large quantity of insipid pointless teas made in April and May, that depresses the market, and gives cause to men to sneer at Ceylon quality. Why do planters make so much at that season? Better prune more in March, as quite half the April and May teas showed no profit this year."

But is it not evident that cheap teas in America may benefit our planters in the end by enabling a wide dissemination and when once the "taste" is got, we may expect the enquiry to be for Ceylons?

PRODUCE AND PLANTING.

BRITISH GROWN v. FOREIGN PRODUCE.—This question of British grown versus foreign produce is of interest to tea as well as sugar planters, because it has often been stated that the consumer of produce desires to give his own countrymen the preference when he can, and that this has been a factor in the development of the Indian and Ceylon tea industry. We fear that in the case of sugar the facts do not point in this direction. The *St. James's Gazette* recently instituted some inquiries as to the part the consumer played in the matter of cane sugar and beet. As a result the special commissioner who made inquiries says: "In the first place the average purchaser rarely knows what she is buying. This applies to pretty nearly everything. When Englishwomen go shopping they place themselves almost entirely at the mercy of the shopkeeper. They do not know the quality or the origin of the goods they buy, and when they take the trouble to ask, which is seldom, the shopkeeper, who is often equally ignorant, may tell the truth or not as he pleases. What they care about is not quality or origin, but cheapness and appearance; and of the two the upper classes are more taken by the cheap, the lower by the pretty. If they care about any other consideration it is the name attached to a thing, either because it has traditional value or because it is much advertised.—*H. and C. Mail*, Nov. 19.

PLANTING NOTES.

FIJI AND THE NEW HEBRIDES.—Mr. R. B. Heinekey, of Colombo, has, says the local "Times," recently returned from Fiji travelling *via* New Caledonia and the New Hebrides. In New Caledonia Mr. Heinekey found the French Government encourages the growth of coffee, giving free grants to new arrivals of good character. In the New Hebrides coffee is as yet only in its infancy: and the coconut plantations are not good. With regard to Fiji we are told it "has always been a sink for money. Many men have taken money into the country, but it is not on record, any one has ever taken money out of it by planting." Coffee is a failure, but sugar (under an Australian Company) is doing well, while copra is a large industry. Messrs. Lever, Bros., of Sunlight Soap fame, who have a mill at Sydney, crush 10,000 tons a year. Poonac realises £4 10s a ton in Australia. The conditons for tea in Fiji are favourable, but labour is very costly.

A PAMPHLET ON "BERMUDA LILY DISEASE" has reached us. A friend who has seen it, writes:—"This disease is also very troublesome in English gardens. Various remedial measures have from time to time been tried though none, of course, with permanent success, the disease being a durable form of fungus. Its evil effects can, however, be combated to a great extent by soaking the bulbs before planting, in strong solution of Condy's fluid. But it is the minute 'mite' insect that gives most trouble; such applications as soft soap and sulphur, quassia solution, and carbolic acid solution, have frequently to be resorted to diminish its numbers. In Bermuda, where lily bulb-farming is a considerable industry, the disease seems to have made itself rather severely felt. But we need hardly fear its depredations in Ceylon, for, outside of the Botanic Gardens the lily is seldom, if indeed at all, seen. Even at our higher elevations the climate is such as makes the cultivation of this beautiful (and profitable, when grown for market class of plants almost impossible."

THE CEYLON GENERAL TEA ESTATES, CO, LTD.

This Company has just been floated principally through the agency of Messrs. W. H. Davies & Co., to acquire, we believe, the following estates:—

Estate.	District.	Full bearing.	Young tea.	Reserve, &c.	Total acres.
Penrith ..	Kelani Valley	361	79	368	808
Logan ..	"	202	36	50	288
Verulupitiya ..	"	175	90	160	425
Weymouth ..	"	110	105	81	296
Sirisande ..	"	148	42	77	267
Stinsford .. }	"	300	86	52	438
Ivies .. }	"				
Hemingford ..	"	220	30	175	425
Bovillae ..	"	142	35	20	197
Alnoor ..	"	221	97	188	506
Glanrhos .. }	Kalutara	171	214	109	494
Eaglesland .. }	"				
Clontarf ..	"	195	—	50	245
Attabagie Group.	Pussellawa	350	155	767	1,272
Orion Group ..	Gampola	274	135	94	503
Hatale ..	Kallebokka	434	13	599	1046
Kuruwilla ..	Matale	54	54	100	208
Benveula ..	"	159	72	144	375
Clova-Sana ..	Kuruwitte	112	—	344	456
Gonamotava ..	Haputale	234	200	110 }	1,067
Berragalla ..	"	225	179	119 }	
	Acres ..	4,087	1,622	3,607	9,316

Under Tea ..	5,709	
Reserve ..	3,607	
Coffee ..	143	143
Total Acs. (about)..	9459	Acs. 9,459

Share capital, £400,000; divided into 40,000 six per cent. cumulative preference shares of £5 each £200,000 (which are preferential as to capital as well as dividend); 40,000 ordinary shares of £5 each, £200,000; and 1,400 five per cent. first mortgage debentures of £100 each, £140,000.

PRESENT ISSUE.—27,000 preference shares, £135,000; 23,000 ordinary shares, £115,000; 1,400 first mortgage debentures, £140,000.

The purchase price to be paid by the Company for the above Estates, free of encumhrances, has been fixed by The Malabar Company, Limited, who are the Vendors, and are selling at a profit, at £363,500, payable as to £45,000 in fully-paid Preference Shares, as to £38,330 in fully-paid Ordinary Shares and as to £280,170 in cash, leaving the sum of £26,500 for Working Capital, which is considered quite sufficient. In part payment of the purchase price the Vendors have agreed to take one-third of the present issue of both Ordinary and Preference Shares, which is the limit allowed by the rules of the London Stock Exchange. The Vendors will discharge all outgoings belonging to the season 1896-97 in respect of the Gonamotava and Berragalla Estates up to the 1st day of Sept, 1897, and in respect of the other Estates up to 1st October, 1897, from which respective dates the Company will take possession and will be entitled to the profits. The Vendors will pay all expenses of and incidental to the formation and registration of the Company up to the first general allotment.

AUDITORS.—Messrs. Broads, Paterson & Co., Chartered Accountants, No. 1, Walhrook, E.C.

SOLICITORS.—Messrs. Harwood & Stephenson, 31, Lombard Street, London, E.C.

BROKERS.—Messrs. W. I. Carr, Sons & Tod, 2, Royal Exchange Buildings, E.C.

BANKERS.—The Commercial Bank of Scotland, Limited, 62, Lombard Street, London, E.C. Head Offices, Edinburgh, and Branches; National Bank of India, Limited, 47, Threadneedle Street, London, E.C.

AGENTS IN Ceylon.—Messsrs. Carson & Co., Colombo.

MANAGING AGENTS AND SECRETARIES.—Messrs. Rowe, White & Co. and Registered Offices of the Company, 16, Philpot Lane, London, E.C.

For the past season, the crop is returned by the Estate Inspectors or the owners at .. .. lb. 1,896,917 of tea

The production for the current season is estimated by the Estate Inspectors or the owners at .. „ 2,361,900 „

The large increase in the estimated crop for 1897-98 is due partly to the acreage of young Tea that will come into bearing, and partly to the natural rate of increase in the Tea in bearing though not yet fully matured.

The Directors believe that when all the young Tea is in full bearing the yield should, on very moderate estimate, be .. .. .. „ 3,065,800 „

From a careful consideration of the figures given in connection with the Estates, the Directors consider that the following calculation is a reasonable one.

For the current year, taking the Tea at the moderate average selling price of 7½d per lb., and the cost thereof laid down in London at 5d per lb. at an exchange of 1s 4d per rupee the net profit of 2½d per lb. is the result. This on a crop of 2,361,900 lb. is equal to £24,603

The profits from the sale of Tea Seed are estimated at.. 2,500

„ „ Coffee „ .. 2,686

„ „ Tea bought and manufactured for adjoining Estates are estimated at 1,700

Giving a total of —— £31,489

The interest on £140,000 debentures at 5 per cent will absorb .. £7,000

Dividend on £135,000 preference shares at 6 per cent. will absorb .. 8,100

London expenses, estimated at .. 1,250

—— £16,350

Leaving available for dividend on the ordinary shares £15,139

which, it will be seen, is sufficient to pay 10 per cent on the present issue, and leave a balance available for Reserve, &c.

It will be observed that a strong feature in this undertaking is the large proportion of young tea, which, each successive year, should bring increasing profits to the Shareholders, and that there is also an ample reserve of land for further extensions. There is also a steady business in the sale of tea seed from the Clova-Sana Estate.

AN ECONOMICAL MOTOR FOR TEA FACTORIES.

The following is a copy of a report from Fairfield estate to Messrs. Davidson & Co.:—

Cost of working *half a cent* per lb. of tea made.

A report has recently heen received by us regarding the cost of working a Tangyes patent eight horse-power oil-engine supplied to Fairfield estate, Peermaad, South India. The trials of the engine, which extended over a period of three months were carried out under the supervision of the Superintendent of the estate, and the figures here quoted have been authenticated by him.

The engine is a Tangyes' eight horse-power engine, and the oil used is ordinary Russian "Daylight," the contents of one case (two tins) being about 65 lb. oil say nine gallons.

This oil was purchased at Alleppey, and had to be transported to the estate for 12 miles by boat, and about 60 miles hy bullock cart, a total distance of about 72 miles, the cost of which is included in the figures below. The total cost of oil consump-

tion *on the estate* per lb. of made tea was as follows:—Date May, 1897; total days worked, 29; Average hours worked per day, 4 hours and 58 minutes; total tea sifted, 11,013 lb.; total tea manufactured, 9,908 lb.; quantity of oil consumed, 14 cases; cost per lb. of tea made, 1·32 pice ·67 of a cent.

In a similar manner during the month of June, the cost per lb. of tea made was 1·17 pice. ·60 of a cent.

For the three months ending 30th June 1·30 pice —·67 of a cent. The oil consumption in each case includes the cost of all oil used for the factory lamps, and all wastage and loss that may have occurred in addition to the cost of transporting it for 72 miles.

The actual cost of the oil required for driving the engine itself may therefore be reckoned at about ½ a cent (Ceylon coinage) per lb of made tea.

CEYLON TEA IN RUSSIA.

INTERVIEW WITH MR. W. JORDAN.

Mr. W. Jordan, of Messrs. Jordan & Co., Talawakele, while recently in Europe, paid a visit to the Baltic and to Russia. In the course of an interview with a representative of the *Observer* Mr. Jordan gave a good many particulars respecting Ceylon tea and the progress made in Russia with its sale.

"What," asked our representative, "were your general impressions?"

"I went to Russia expecting to find them a very rough people, on an equality with the Turks, semi-civilised, but I came away with a very different opinion. The country is certainly ruled by an iron hand, but it is a great country and there are a great many tribes, some of them very warlike and difficult to control. We found the people we came in contact with, exceedingly courteous and willing to render us any help they could, though we certainly might have been watched but we did not know it."

"How did you travel from England to Russia?"—"By the steamer 'Ceylon,' an old P. and O. boat under the command of Capt. Roach. We called at Elsinore (where we looked in vain for Hamlet's ghost), Copenhagen, Stockholm, Cronstadt, and then (having satisfied the authorities that our passports were in order) to St. Petersburg, Moscow (400 miles distant) and Nijni Novgorod, a farther journey of 280 miles. At the last place a fair was on, and also the great Pan-Russia Exhibition. I was the only of the party connected with Ceylon. We travelled under the auspices of the London Polytechnic and altogether journeyed 4,820 miles at a cost of eleven cents per mile."

"And how then about Ceylon tea?"—"Oh yes? That was my chief reason in visiting Nijni Novgorod. Previous to going there, I called at the Ceylon tea shop in Moscow, which is under the management of Mr. Rogivue. Unfortunately it was a feast day and the shop was closed, but I saw that it was situated in a crowded thoroughfare and that there was a good exhibition of tea and advertisements of tea in the windows. At Nijni Novgorod the Ceylon tea-house was outside the exhibition, which, being a Pan-Russian Exhibition the authorities would not admit anything from Ceylon. The kiosk was situated in the main street leading to the chief entrance to the Exhibition and there passed by it millions of people, that were visiting the Exhibition from all parts of Russia, a very motley crowd indeed. It was a very good kiosk and there was a capital exhibition of tea. It belongs to Mr. Rogivue who deserves the greatest credit for displaying our teas in so attractive a way. We found Mr. Rogivue was not there, but we saw his manager, a polished Swiss, quite a linguist, who was very kind and entertained us, supplied us with cups of good Ceylon tea, gave us all the information he could and took us round the Exhibition. There were then four shops in Russia for the sale of Ceylon teas and they not only gave samples away, but actively showed the people who visited them from time to time how to make tea properly. In the Exhibition itself, though we found no tea, we saw large placards on the tram cars advertising Ceylon tea."

"And about tea-drinking in Russia?" "As regards the consumption of tea you must bear in mind the Czar rules over 120,000,000 and they have not to be weaned from drinking coffee or stronger liquors, but are actually tea-drinkers now. In Russia the usual refreshment offered a visitor is the glass of tea or 'chai,' as it is called. They produced to us two teapots, the small one contained the freshly made infusion, and the other, a larger one, containing boiling water. Glass tumblers were brought in with electro-plated handles and a small China tray containing slices of lemon with a lump of sugar. The glasses were then rolled in warm water, replaced in the stand, and slices of lemon put in each with a small quantity of the tea infusion poured in the cup, which is then filled with hot water. The piece of sugar is then inserted in the mouth and the tea sipped through the sugar. The visitor can, if he likes, have a single glass of tea just like a man can have his glass of ale and the charge for it is about 3d. We saw large halls in which scores of the peasants of the country had tea, calling for little if anything else."

"But we are losing Mr. Rogivue?"—"Yes and I am personally very sorry, for he has had very valuable experience and if he had been properly treated he might have been still with us. I am not of the opinion that the more Indian tea that is sold in Russia, the more room there will be in England, for Ceylon tea. What we want to do I am convinced, whether it be in Russia, or on board ship, or eslewhere, is to show people how to make tea. An American lady only the other day praised the work our Association is doing in America in introducing Ceylon tea, holding lectures and showing how it should be made. I have made it personally on board ship to show fellow passengers how the tea should be dealt with and have met with great success."

"What about the future?" "I should" (added Mr. Jordan) strongly recommend that there should be a good representative of our Association stationed in Russia, with sub-agents at Warsaw, St. Petersburg, Novgorod le Grand, Odessa, and Moscow, and also in Nijni Novgorod during the Fair. None but the best tea—Pekoe and Orange Pekoe—should be sold and the agencies established by us should not sell tea retail. Push and publicity by means of advertisement would do much: samples should be freely given away. Mr. Lipton has made his special teas known throughout the world, and why should not Ceylon teas be similarly established in public favour. Let them get to work at once, before Indian teas are permanently established and before the completion of the railway to China makes teas of that country cheaper in Russia. Ceylon tea can hold its own in Russia, if it is only made widely known and the man who can do this will deserve well of his fellow-colonists. For myself, interested as I am in this island, I am trying to do what little I can, in the direction of making our teas known and showing how they should be made."

CEYLON FISHING CLUB.

The annual general meeting of the Ceylon Fishing Club, was held at Hill Club, Nuwara Eliya, on the 27th Nov., when there were present:—Messrs. S. M. Burrows (in the Chair), C. H. Bagot, G. C. Ross Clark, John Fraser, and North C. Davidson.

Mr. BURROWS then read the following report of the working of the Club during the past year.

The last annual meeting of this Club was held on September 12, 1896, and a report was read by the Hon. Secretary (Mr. Lushington). Subsequently three meetings were held—one on December 23rd, 1896, when the usual election of office-bearers for the ensuing year took place, and the accounts of the Club up to that date were laid on the table. A second meeting was held on March 1st, 1897, to discuss the distribution of the fry, and a third meeting was held on September 25th at the request of several members, and a preliminary report was submitted by the Hon. Secretary; the accounts up to date were laid on the table and passed, and the arrangements as to *ova* for the next hatching season were discussed.

RULES.

During the year the following rules were altered or amended. In Rule No. 1 page 2 the word "person" was deleted and the word "resident in the island" were substituted for it. The following words were added to Rule XI: "Sufficient notice of such proposed alteration or amendment shall be given to the Hon. Secretaries to allow them to give each member of Ceylon Fishing Club ten days' notice before the general meeting of such alteration or amendment." Rule III that licenses to fish for trout by non-members of the Club shall be at the following rates:—

One day (a)	R12·50
,, week (b)	25·00
,, month (c)	75·00
The whole season (d)	120·00

Rule V. section (b) was altered to read thus: "They shall at once return to the water all trout accidentally caught."

Rule VII: that "subject however to the exception contained in Rule No. 5 was expunged." It will in consequence be advisable to bring out a fresh addition of the C.F.C. rules. It was also decided to keep on, the present watcher, who has done good work during the year, in watching the local streams and lakes preventing poaching and prosecuting offenders, and to employ in a similar capacity the resthouse-keeper, Horton Plains and the Patiapola resthouse-keeper.

FISH REGISTER.

The fish register kept at the Horton Plains resthouse having proved successful and interesting, it was thought advisable to start similar books in Nuwara Eliya; and the Grand Hotel, the Club. St. Andrew's, and Keena Cottage, have each been supplied with one. It is hoped that fishermen will keep the Club by entering them up carefully. The Horton Plains register shows that 384 fish were caught by members between February 15th and August 22nd, of which 216 were under 11 inches, and were returned to the water. The largest fish taken was one of 3¾ lb. caught by Mr. A. T. Cathcart; while 8 fishes were caught between 2 and 2½ lb.; 70 between 1 and 2 lb. and 89 between ¾ and 1 lb. Unfortunately there is no register of fish caught in Nuwara Eliya though it is hoped that this will be remedied by next year.

CLOSED SEASON.

The alteration of the dates of the close season has been discussed, but no definite conclusion has yet been arrived at. It is a difficult question on which everybody defers. The fact is, we none of us know much about the breeding habits of trout in these waters, and of the alteration in their habits caused by change of climate, food, etc., because we are most of us busy men who have no time to devote to the close daily observation necessary for such a study. A leisured man with previous experience who would take up e matter as a hobby would be a real God-send. Two stewponds were made early in the year—one by the kind permission of H.E. the Governor in the grounds of Queen's Cottage, and one under the superintendence of Mr. Farr at the Horton Plains. It is too early yet to pronounce whether they are a success or a failure. Fry were supplied to each but the Horton Plains pond, was seriously affected by a heavy flood. Queen's Cottage pond, has been undisturbed and it will be dragged early next year before fresh fry are put in, to ascertain how the last year's fry have fared. A great many female trout full of spawn were sent to us for inspection by the fishermen who caught them in July and August, but hardly any walers were caught then with signs of milt in them. Every effort was made to discover signs of fish working up towards the headwaters in pairs or of females depositing eggs in the sand, and the removal of sand and rubble from the upper parts of the streams was prohibited for several weeks in order to keep the waters as undisturbed as possible. But it cannot be said that so far there are any certain proofs that the trout are spawning in the Nuwara Eliya streams. An experienced member and former Hon. Secretary of the Club is of opinion that they never will and that our one hope of spawning lies in the Horton Plains streams. On the other hand our streams here are not much warmer than, or very different from, some of the streams in New Zealand, where it took from ten to twelve years before the fish would spawn and the power of adaptation to environment, talent in all animals, trout included, is well worth waiting for and endeavouring to encourage.

THE YEAR'S RECORD.

Under this head the year's record has been disappointing to the verge of disaster. 40,000 *ova* were ordered out at the end of 1896 from the usual source—the Surrey trout farm of the Messrs. Andrews. They arrived in two batches in January and February. Every possible precaution was taken to ensure their immediate delivery and rapid transport to Nuwara Eliya. The hatchery and trout house were in excellent order, the latter having been doubled in size. Unfortunately, Messrs. Andrews experienced great difficulty in finding properly appointed steamers to carry the *ova*, and in order not to miss the dates they shipped them by vessels where there were no proper cold rooms and no sufficient store of ice. Nor were the boxes left undisturbed, but had obviously been turned up on end, and shifted about ruthlessly. The result was that the last batch was ruined and the second batch being nearly so. The eggs when unpacked instead of lying flat were found crushed together into a horrid mass of corruption and it took many hours' hard work, day and night to extract the possible survivors. They, however, were so hopelessly affected by the corruption of their neighbours, that fungus set in almost at once and spread with fatal rapidity; so that eventually only 1,506 fry, were hatched and were distributed as follows:—200 to Ambawella Oya; 100 to Queen's Cottage Stewpond; 499 to Nuwara Eliya streams; 400 to Buluhalu Oya and Kurundu Oya; 500 to Horton Plains' streams and Stewpond. It is a disappointing results but it is useless to cry over spilt milk as over spilt *ova*. Messrs. Andrews, reduced their bill by about ⅓rd, and have promised to be more careful in future as to shipping the *ova*, and it is hoped that arrangements have been made as regards the coming batches which will prevent the recurrence of such disasters. It may be some slight comfort to know that we are not the only Club that has to face such disappointments, for the annual report of the Nilghiry Game and Fish Association has a very similar tale to tell, and even heavier losses to deplore. If it were necessary further to prove that "the best laid plans of trout and men gang aft a-glee" two slight incidents might be mentioned which confirm the theory. As it was an abnormally warm season when the *ova* arrived, we telegraphed to Colombo, for ice to lower the temperature in the filter boxes. It arrived packed in kerosine tins, and so impregnated with oil that none of it could be used. Again about 40 of our few surviving fry suddenly died in 24 hours of no perceptible cause except a small red spot on the gullet. A careful search through

the troughs disclosed the presence of 3 or 4 leeches and if they were really the cause of the loss another terror is added to the troubles of tropical trout breeding.

FINANCE.

The financial condition of the Clnb is quite satisfactory. After paying for the unlncky *ova* and meeting two abnormal and heavy charges, the rebuilding of the hatchery and the making of the stewpond at Queen's Cottage, the balance to our credit today is R1,230·91. Our income has steadily increased both in the way of subscriptions and licenses in spite of the manifold claims upon the purse during jubilee year: and, as far as one can judge, the average fisherman finds quite enough sport, to justify his expenditure.

Mr. Burrows' Report was received with applanse.

INTERESTING REGISTER OF TROUT CAUGHT.

The following postscript was added by Mr. Bnrrows to it:—"The two following records of a year's fishing in the Nuwara Eliya and Horton Plains' streams have been kindly snpplied by two members, and are published here, as giving a fair average of possibilities." Mr. Burrows added this postscript in consideration of the following letter addressed to him and a promise by Mr. John Fraser, of Abbotsford, to give a register of trout caught by him:—

Calsay, Nanu-oya, November 24th, 1897.

S. M. BURROWS, Esq.

Dear Sir,—Herewith please find a register of trout, caught by me in season 1897, which inclndes fish caught at Nuwara Eliya, Hortons, and Ambewella.

1	Trout weighing	lb. 4
1	do	lb. 1¾
3	do	lb. 1½
4	do	lb. 1¼
11	do	lb. 1
29	do	from 8 oz. to 15 oz.
49	do	equalled 46 lb. 9 oz.

29 tront returned, under 11 inches.

Last year, I was requested to send in an acconnt of fish caught, and do so again, as I think it is interesting to know the number of fish caught in each season. G. C. ROSS CLARKE.

The following Committee was appointed:—General Committee—newly appointed—Messrs. North C. Davidson, G. C. Ross Clarke, F. L. Clements; old members re-elected—Messrs. C. H. Bagot, A. F. Broun, H. G. Cuff, J. E. A. Dick-Lauder, T. Farr, E. Jeffries, E. M. Leefe, H. V. Masefield, J. M. Purdon, J. H. Starey, A. R. Wilson-Wood, C. P. Hayes, C. Bayley, J. Fraser, Capt. R. Ward Jackson, and G. M. Fowler. Managing Committee:—Messrs. T. Farr, H. V. Masefield, Wilson-Wood, and C. H. Bagot, with Messrs. S. M. Burrows and J. Wickwar as Managing Secretaries.

THE AMSTERDAM CINCHONA-AUCTIONS.

The cinchona-auctions to be held at Amsterdam, on December 9, will consist of 8,216 bales and 626 cases Java bark. The stock in first hand, including the above quantity now consists of 1,715 packages Government and 8,022 private bark. These anctions will be the largest ever held anywhere, and it will be interesting to see if the market can stand this severe test of its strength.—*Chemist and Druggist.*

THE JAVA QUININE WORKS.

The Java-quinine-factory at Bandong, has now been a work for several months, but, like most new undertakings, it has had a good many difficulties to overcome. The first of these was, that extensive repairs were found to be required in the machinery (which had been purchased in Germany) almost as soon it was put up. When that was done it was found that the producing-capacity of the work was inadequate to the probable demand upon the plant, and the factory had to be extended. The Dutch-Indian Government in order to encourage the Java works, ordered 500 kilos. sulphate of qninine to be delivered on July 1, but this order conld not be execnted in time, and had to be transmitted to Europe by the authorities—a fact which did not increase the prestige of the works. Now, however, the factory appears to have passed through its teething period, and is already trying to extend its operations beyond the Dutch East Indies. Thirty kilos. of the Bandong qninine have been sent for sale to Singapore, where it was said (on whose authority we do not know) to be "better than Howards." Messrs. McNeill & Co., Samsrang, Java, one of the firms who act as selling-agents for the Bandong works, report that the samples of the qninine which they have sent to their clients have everywhere given great satisfaction, and Messrs. Maclaine, Watson & Co., the selling-agents at Batavia, say that in the first week of October they received the following cablegram from London:—"Ship any quantity yon can; we can sell large quantities up to 1s per oz." (At that time the London quotation of second-hand German qninine was 1s 1d to 1s 2d per oz.)

But the Java quinine works anticipate violent opposition from the Enropean makers. They say that Herr Buchler, the director of the Brnnswick factory, who visited Bandong just before the establishment of the works, publicly declared that if the factory were really started, the European mannfacturers would kill it, even if they had to rednce the price of quinine to 6d. And it is held in many qnarters in Java, that the great advance in cinchona bark which we are now witnessing is not dne to the reduction of the bark-ontpnt, but to the deliberate policy of the great European manufacturers, who want to make the prices for cinchona bark in Enrope so remunerative, that the Java plsnters will have no inducement to send their bark to the Bandong factory, to be converted into quinine. It is pointed ont that two days before the Amsterdam sale of September 30, at which the nnit advanced to 6·27c., a cablegram had been sent to Holland, announcing that the enlargement of the Bandong factory had been completed, and that the works were now able to turn out 100 kilos. of sulphate of qninine a day.—*Chemist and Druggist.*

"FINE PLUCKING."

A Planter writes:—"You remember the denial of the charge of fine plucking which a correspondent of yours reported. Well! I hear that so fine are they plucking now that they give a name for 5lb! How that will pay remains to be seen."

ORANGE GROWING NORTH OF KANDY.

A planting friend is good enough to write:—

"I am sending into Kandy a box of Mandarin Oranges which kindly accept;—when grumbling some time ago about not being able to find a market, you expressed a wish to 'send some along' so here they are. We can grow this kind as the leaf fungns which is so fatal to the other kinds does not affect these so badly. Coffee leaf disease is a trifle compared with the white fungus attacking the orange, as the flush of young orange leaves is covered with the fungus the instant they appear, never giving the tree a chance to put on fresh leaves and it dies gradually. I have had hundreds of the large green orange trees killed by it and a good many Mandarin from this, and some other cause, a borer I think—were it not for this I conld have flooded the market with oranges. I sent some of the fungns to Dr. Thwaites, years ago. His reply was collect and burn—it is very deadly, I quite agree with the verdict. I know nothing so terribly fatal to cultivation."'

We have to thank our friend for a treat, shared with several invalids. The oranges arrived fully ripe but all in good condition. As to the fungus, our correspondent should send specimens to Mr. Willis or Mr. E. E. Green. The lady-bird beetles cleared the orange trees in Hawaii and California of bug.

TREATMENT OF TEA IN LONDON WAREHOUSE.

INFORMATION of interest to planters appears in the proceedings of the latest meeting of the Indian Tea Association in Calcutta, from which we quote as follows:—

The London Secretary stated that from enquiries made he found that it was not now an uncommon practice to leave the process of bulking the tea to be done in London, notably by several well-known concerns, presumably with the object of avoiding claims, although in the opinion of the trade it had been avowed that a decided preference is given to teas bulked on the factory. He considered that it was much to be desired that a continued effort should be made to lay down tea in London in such a condition that it might be kept untouched without risk of deterioration owing to the humidity of the climate.

In reply to a letter of enquiry on the subject of the use of machinery in repacking tea, the Managing Director of Butler's Wharf wrote to Mr. Tye as follows:—

"We do not use any machines for repacking teas. It has been an utter failure at the London tea Warehouse. We fail to see how an average sample of tea can be drawn from any machine packed chest. All bulked teas are weighed gross, and nett, both under the supervision of Her Majesty's Customs; teas not bulked are weighed gross, and average tare fixed by Her Majesty's Customs."

In this connection the Secretary was instructed in writing to London to embody the remarks made by Mr. Traill, when the letter was in circulation, which were to the effect that the Association should press for nett weighment of all teas turned out for bulking in London. Nett weighment meant the actual weighment of the contents of each chest, and not as at present, weighing the chest gross, deducting fractions of a pounds, then turning the tea out and taring the chest, taking any fraction of a pound as a full pound. By this system it is quite possible for the Customs' weight to show 1 lb. 15oz. less than is in the chest. There is no doubt that many claims for loss in weight are largely due to this antiquated and unfair method of weighment. It was presumed that the wholesale dealers could not reasonably object to a system that would ensure their getting the weights of tea they paid for.

THE POSITION OF CITRONELLA OIL.

Buyers are afraid to purchase on speculation any longer, and unless they have firm orders in hand they prefer to await the further development of things. This is particularly the case in some essential oil markets, especially citronella oil. The position of this oil at present appears to puzzle most people in the trade, and those supposed to be in "the know" can only surmise, only guess at, the real cause of the present spurt in Ceylon. Prices there have risen in an incredibly short space of time from about 11d per lb. in drums to 1s 5d c.i.f., and it is extremely doubtful whether oil even at this figure would be procurable in Galle, the principal port for citronella oil, whereas here in the open market it would be difficult to find a buyer over 1s 2½d c.i.f. Abnormal circumstances only can have produced such an extraordinary market in the East, for there has not been a shortage of supplies or unfavourable crop report, nor has the equilibrium of the market been at all upset by a strong demand from Europe or America. In fact, all along the belief has been current that both dealers and consumers were well stocked. This belief in heavy stocks, we are inclined to think, is mainly responsible for the boom now prevailing in Ceylon, inasmuch as it has induced some shippers, and even dealers, to enter upon a bear tactic, and the attempt of these bear operators to cover their open engagements has been instrumental in creating the belief in Ceylon in a large bear account. Prices rose rapidly, supplies were withheld from the bazaars, and a veritable corner for prompt and near months' shipments was established, to the great dismay of the few bear operators. Some of these speculators have been caught nicely, and have to pay heavily for their speculative operations, but it is comforting to know that the number of these luckless bears is a small one, consisting as it does to the greatest extent of dealers. To London dealers it will be somewhat gratifying to know that some of the Liverpool speculators are involved as well, gratifying inasmuch as they are accused by London dealers of having spoiled the market on various occasions by unjustifiably low sales. London must, however, not forget that Liverpool, with its large soap factories, is a staunch supporter of the citronella oil trade, in fact, only since the development of the Liverpool, or, rather, Birkenhead soap factories, has citronella oil attained the importance it now enjoys. To judge from indications from Colombo, it would appear that we have at last reached the highest price, offers under 1s 5d c.i.f. are invited, and, although some sanguine people talk of 1s 9d c.i.f. we have little doubt that as soon as the bear accounts have been covered in, Ceylon will recede quickly, and by the beginning of the new year, we shall see the old range of prices again.—*Commercial Record.*

PLANTING NOTES.

"WARA" FIBRE.—A useful letter on this fibre and plant will be found on another page today, from a planter who has experimented to some purpose. It is quite evident that the cultivation of *calotropis gigantea* is worth a trial; but our correspondent "B" should tell us what he expended in labour, &c., for the quantity of cotton and fibre he sent to England.

ROYAL GARDENS, KEW "BULLETIN" of Miscellaneous Information. Appendix III.—1897. Contents:—List of Staffs in Botanical Departments at Home, and in India and the Colonies. For Ceylon we have:—Ceylon.—Department of Royal Botanic Gardens:—Director—John C. Willis, M.A.; Peradeniya, Curator, Hugh McMillan; clerk, J. Ferdinandus; draftsman W. de Alwis; Hakgala—Superintendent, William Nock; clerk and foreman, M. G. Perera; Henaratgoda—conductor, S. de Silva, Arachchi; Anuradhapura—Conductor, D. F. de Silva; Badulla—Conductor, D. A. Gooneratne.—Appendix I—1898. Contents: —Lists of seeds of Hardy Herbaceous Plants and of Trees and Shrubs.

VANILLA-GROWING IN THE GERMAN COLONIES.—The German *Land und Plantagen Gesellschaft* of Kitopeni, near Bagamoyo, German East Africa, have set aside a large piece of land for the culture of vanilla. Part of this is already in bearing, but the crop this year has been very poor on account of the dryness. The plants wants a moist soil and must have shade-trees, such as crotons or bananas to protect them from the sun and absorb the excess of moisture. The finest vanilla-plantation in German East Africa is that of the Catholic Mission at Bagamoyo.—*Chemist and Druggist.*

TEA-GROWING IN THE CAUCASUS.—The new tea plantations at Chakva, in the Osurgentski Government in the Caucasus, have given most excellent results, and encouraged their proprietors to engage a number of Chinese experts to instruct the natives in all the intricacies of tea-growing. The last tea crop yielded ¼ lb. of tea for every bush planted, or 1,500 lb from an acre having 6,000 tea plants on it. The whole available area for tea-growing is 20,000 acres therefore the total yielded could with ease be brought up to nearly 30,000,000 lb., which represents more than a half of the annual consumption of tea imported into Russia.—*Planters' Gazette*, Nov. 1.

Tea in Russia.—An interesting interview on this subject will be found on another page. Though praising Mr. Rogivue's work, it is evident that Mr. Jordan does not believe in establishing a rival business to the Russian dealers as the best means of making our teas known.

Lavender-growing in Victoria.—Mr. N. A. Woolnough, who has a lavender farm in Moorabbinshire, Victoria, advises Australian agriculturists to take up lavender-oil distilling. He says that all the oil Australia could send to Europe for ten years would be but a drop in the bucket of European consumption, so that there is no danger of overstocking the market.—*Chemist and Druggist*, 13 Nov. 1897.

There Seems no bottom in Coffee—says the *Grocers' Journal*—highest grades maintain their position fairly well, but the lower have got down to incredible depths. This week the record has again been beaten, and while the market has taken it quietly here pretty well a panic has occurred in Amsterdam. Santos has been sold forward as low as 29s 6d., French rates being equal to about 30s; while Hamburg prices have shaded even these low figures, and Java in Amsterdam has been bought and sold at wide ranges in the excitement induced by reports of immense quantities in sight in Brazil.

Coffee at KotaKota, B.C. Africa.—Fourteen or fifteen miles inland from KotaKota is the pioneer coffee estate on Lake Nyasa. The coffee was planted at the end of the last wet season. I was surprised to see how well it looked. The land is evidently well suited for coffee growing as the young plants look exceedingly healthy. The elevation is about 300 feet above KotaKota or about an elevation of say, 1,800 feet above sea level. This seems to suit the coffee very well. Labour is cheap here (as it is all the way up the coast of the Lake) the ordinary wages being 1s 6d a month (with a yard of calico a week food pay).—*B.C.A. Gazette*, Sept. 2).

What is Prosperity for a Nation?—It behoves all intelligent Sinhalese to ponder the answer:—"It is to have all its people at work. When all the people are at work the nation is adding to its wealth all that is possible in its day and generation. New inventions might have made it more, but for each year the labour of each nation is the sum of that year's creation of wealth." This is in a Hawaiian journal which adds:—"Teach the young Hawaiian lads, who are each year graduating from our high schools,—teach them how to care for coffee trees,—how to prune and handle them, how to pick and care for the berries. They are well suited for this work, in which hundreds of them may find steady and profitable employment."

Labour Difficulties in Fiji.—In the "Fiji Times" of Oct. 9th, we find an order of the Commissioner for Native Affairs which shews what restrictions are placed on engaging natives:—

A circular letter from Hon. W. L. Allardyce, Native Commissioner, is published, in which Bulis are warned that married men are not to sign on to work for Europeans for a longer term than three months under heavy penalties.

We learn from an authority on Fiji Affairs that "Married men often engage to go away and work for a year, but they are prohibited from doing so by law, and if found out are liable to punishment. No married man is allowed to engage to work out of his district for a longer period than 3 months."

Wood Ashes as a Medicine.—In the *American Naturalist*, Mr. Stahl of Illinois extols the virtue of wood-ashes as a medicine for farm animals, and says that used with discretion no other remedy is required to keep animals in full health. For swine he makes a mixture of wood-ashes, charcoal, and salt, and keeps it constantly before them in a large box having holes in the bottom, through which the animals work it out as they require it. He also speaks well of the mixture for horses, and in thirty-seven years of experience of farm-life has lost only one horse, and that through an accident. The ashes may be administered by putting an even tea spoonful on the oats twice a week; but he thinks it preferable to place a mixture of three parts wood-ashes to one of salt constantly before the animal in a little compartment at one corner of the feed-box. Mr. Stahl also has great faith in the value of wood-ashes when used as a fertiliser.—*Journal of the Jamaica Agricultural Society*.

Coffee in Mexico.—Our home correspondent elsewhere reports, not one, but two expeditions of Ceylon men to Mexico to see about "Coffee investments." Mr. Naftel appears to lead the one and Mr. Jas. Sinclair the other. Our readers are aware from letters in the *Observer*, of Mr Wm. Forsythe (formerly of Maturatta) that European enterprise in coffee has been extending for some time back in Mexico; but with all the investments (on behalf of Ceylon men especially) in Brazil, Costa Rica, Java and the Malayan Peninsula, of late years, one would imagine that coffee had had its full share of attention. No doubt the troubles in Brazil over the Government and paper currency is an encouragement to invest elsewhere in our old staple.

The Camphor Trees of Japan, China, and Formosa are beginning to fail, and the United States Government have tried the experiment of growing camphor in Florida, with encouraging success. It is found that there is no need to kill the tree, as they do in the Far East, because the gum can be extracted from the leaves.—*Globe*.

Very Obliging.—The Board of Tea Experts, recently appointed by the United States, who distinguished themselves by framing some obnoxious tea regulations, have found the task so tremendous that they have resigned in order, as they generously point out, that "other members of the trade" may "bring a more varied experience and wider range of interest toward perfecting the regulations of the new law." The report which the retiring members have fired off before seeking retirement is an outburst of collective wisdom. They do not seem to know much about tea and tea dust, but they are of an obliging turn of mind, especially towards China. The Chinese Minister having demanded a different standard for Canton teas, and a revision of the Board's rejections, the Board replies mildly that an endeavour shall be made to find specific standards more thoroughly satisfactory. With regard to Ceylon and Indian teas, it has been found that the effect of the sieve test has been simply to exclude high-class teas made from the youngest and finest leaves of the tea plant. The "Experts'" regulation has, therefore, been abandoned for more than two months past, and the Board can only plead that before that time "the difference between dust and needle leaf had not been sufficiently well understood." It is suggested therefore, that siftings from India and Ceylon teas may be resifted through a No. 26 sieve of thirty wire to separate needle leaf from dust. The Board made a show of objection to backing down on the question of the Hyson standard, but recommended. "That the examiners be instructed to compare all Imperials, Hysons, coarse leaf gunpowders, and extra young Hysons with the Hyson standard, and all other young Hysons and small-leaf gunpowders with the young Hyson standard.—*H. and C. Mail*, Nov. 12."

CRYPTOGAMIST FOR CEYLON.

Mr. J. B. Carruthers, who arrived at Colombo by the mail steamer "Himalaya" from England, last month, accompanied by Mr. Dickman of Wariapola estate has come out to Ceylon, we believe, to conduct new investigations into the cacao disease. Mr. Carruthers went up to Kandy, where he was expected to remain about ten days. Mr. Carruthers has not been appointed or engaged by the Government. The London correspondent of our morning contemporary says:—

The Colonial Office, being of a dilatory nature, shewed no inclination to appoint a Cryptogamist to inquire into the disease, so Mr. Dickenson has taken the matter into his own hands. I hope that Ceylon may benefit by Mr. Carruthers' visit; he has many qualifications for the work before him. He has for some time past been working with his father who was till quite recently Keeper of Botany at the Natural History Museum, S. Kensington, and is now Consulting Botanist to the Royal Agricultural Society. Mr. J. B. Carruthers has therefore had ample opportunities of acquiring considerable and varied experience, and I may say, has also been very successful in his treatment of several fungus pests here in England, especially in connection with larch trees. He is recommended by Mr. George Murray, the present Keeper of Botany at the British Museum (Nat: Hist:) as "thoroughly fitted by training by natural ability and by performance to carry out such an investigation" as that in connection with the Ceylon cacao trees.

It may interest such of your readers as are Presbyterians to learn that Mr. W. Carruthers, F.R.S., the father of this rising cryptogamist, combines with the highest scientific attainments in his own special branch a very pretty knowledge of the "Shorter Catechism" drawn up two hundred and fifty years ago by the Westminster Assembly of Divines. Yesterday was celebrated the 250th anniversary of the day, 25th November, 1647, on which the House of Commons ordered 600 copies of the Catechism to be printed. In literary commemoration of the event a book has now been published giving a photographic facsimile of the document as then printed, with an historical introduction and bibliography by Mr. Carruthers, himself a prominent member of the Presbyterian Church in England.

The London correspondent of our evening contemporary says:—

It may be that the Colonial Office (notwithstanding the Kew people having decidedly said they saw no necessity for sending any one from England) have decided to act; it may be that a wire has come from Sir West Ridgeway upon which the Colonial Office people have promptly acted; or it may be that Messrs. Dickenson and Martin Pirie have secured sufficient support to their efforts to obtain £300 guaranteed by those interested in cocoa cultivation, and have closed arrangements with Mr. Carruthers and sent him off to catch the season. Mr. Leake, as Secretary of Ceylon Association in London, sent a circular to the leading cocoa proprietors here giving the facts up to date, and asking for adhesion to the above guarantee, but the replies were not of that nature that would enable Mr. Dickenson to act But Mr. Dickenson has put his back into this business and deserves the greatest credit for all he has done. If his efforts have moved the various firms and individuals, armed as he was with the subscriptions of himself and Mr. Pirie, and, moving quicker than Government action moves, if he has carried his point and despatched Mr. Carruthers, he doubly deserves credit. I may mention that Professor Marshall Ward named a Mr. John Parkin, a demonstrator under him, but not more than two or three and twenty for the post. Mr. Carruthers is 30. His father, now retired, was many years at the Natural History Museum at South Kensington and is now Chemist to the Royal Agricultural Society. He has been, I hear, very strongly recommended for the Ceylon post by his father's successor, Mr. Murray, under whom he has been working.

I have just heard that Mr. Dickenson has himself engaged Mr. J. B. Carruthers, and they have left today *via* Brindisi.

THE CACAO DISEASE AND A SPECIAL CRYPTOGAMIST.

We give Mr. J. Carruthers a hearty welcome to the island, and trust that his mission may result in lasting benefit to our cacao industry and in credit to himself. The name of his honoured father as well as his own have long been familiar to us, and from what we have heard of Mr. Carruthers' ability and past investigations—especially as to a disease affecting larch trees—we are very hopeful that practical good is likely to result from his visit to Ceylon. We feel sure he may depend on the hearty co-operation of Mr. Willis, Director of the Botanic Gardens, and of Mr. E. E. Green, Honorary Entomologist, as well as of the several planters in the island who have paid attention to the pest which has injured, and still troubles, their cacao fields. While admiring and giving special credit to the enterprise of the private proprietors—represented by Mr. Dickenson—who have brought out the Cryptogamist, we trust that the way will be made plain for an official engagement for Mr. Carruthers, so that he may be able to study the cacao disease not on one group of estates, in a single district; but wherever it is found, and so furnish an exhaustive Report and, let us hope, suggest a sufficient remedy. If it be true that Mr. Carruthers is the bearer of a letter from Lord Selborne, Under-Secretary of State to the Governor, we may feel hopeful that His Excellency will agree to make the visit, inspection and Report, more or less an official one, arranging that the three experts—Messrs. Willis Carruthers and Green—should, as far as possible, co-operate to the desired end, namely the overcoming of this cacao pest.

GEM-MINING IN CEYLON.

We call attention to a specially interesting letter from Mr. W. S. Lockhart, Managing Director of the Ceylon Prospecting Syndicate, Limited, which is about to commence active operations in Ceylon. Mr. Goldie and "the plant" may, by this time, be on the way, and Mr. Lockhart himself is likely to follow erelong. We are clearly on the eve of important developments in connection with this department of industry in the island, and about this we shall have more to say in another issue.

The Experiment of Importing Orange from Australia in ordinary cases without refrigerating *en route*, has not been a grand success, judging from the out-turn of the fruit ex-"Lusitania," which must have been disappointing to shippers. Not a single case out of 1,157 catalogued was sound, and many lots contained so much waste that two boxes were required to make one sound when re-packed. Prices ranged from 5s to 17s; but it must be said that the fruit was delicious, and sure to find favour if shipments can be made in better condition.—*Grocers' Journal*, Nov. 13.

PLANTING NOTES ON THE WEST INDIES.

(From *Report of West Indies' Commission.*)

ST. VINCENT.

"At St. Vincent, coffee and spices are being grown. The value of the spices, chiefly nutmegs and mace, exported in 1895, was £1,812.

"In the development of these and other industries (including that of sugar), valuable services have been rendered to the island by the botanic station established in the neighbourhood of Kingston. The plants distributed have included 34,335 Arabian coffee. 3,164 of Liberian coffee, 5,343 cacao, 1,183 nutmeg, 2,390 new and improved sugarcanes, and 1,108 limes. The total plants distributed have amounted to 53,224. Large stocks of plants are still available for distribution. The Curator visits various parts of the island whenever his duties allow, and gives assistance to all engaged in agricultural pursuits. *Bulletins* with agricultural information are issued, and gardeners are trained in horticultural methods. The present curator, Mr. Henry Powell, is devoted to his duties, and his services are widely appreciated amongst all classes of the community. If the stringent measures of economy necessitated by the poverty of the colony are carried out, it is feared the usefulness of the station will be destroyed." *Report of West Indies' Commission.*

DOMINICA.

"The botanic station at Dominica was started in 1890, in a charming spot immediately behind the town of Roseau. Mr. C. A. Barber, late Superintendent of Agriculture in the Leeward Islands, states in a recent report :—'The founding of the botanic station in Dominica will probably, in future years, be referred to as one of the greatest strides in the progress of that island during the present period.' There are large nurseries of economic plants and experimental plots for Cacao Coffee, Kola Rubber trees, spices, and fibre-plants. The station, which may be regarded as one of the most successful in the West Indies, has distributed 165,000 economic plants during the last six years, or an average of 29,000 per annum. The present curator, Mr. Joseph Jones, is described as having rendered 'great services universally acknowledged by the planters of the island.' The cost of the station in 1896 was £400, while the net receipts from the sale of plants were £99. It is proposed in the 'Additional Note' at the end of this report, to extend the work of this station, employ agricultural instructors, and establish an industrial school in connection with it." *Report of West Indies' Commission.*

MONTSERRAT.

"A botanic station, with a gardener in charge, was started at Montserrat in 1890, on a small plot of land to the South-west of the town of Plymouth. The space available was utilised for the cultivation of a selected number of economic plants: large numbers of these were raised and distributed during the last six years. Amongst them were 8,000 plants of Blue mountain coffee from Jamaica, 1,800 cacao, 2,000 nutmeg, pine-apple suckers, grape vines, 800 suckers of the Jamaica banana, Liberian coffee, kola, &c. The gardener also gave information in regard to the cultivation and treatment of new plants. The principal recipients were estate proprietors, and not small cultivators. The latter had evidently not been induced to start new cultivations, as, owing to the absence of shipping facilities, there was no prospect of being able to find a market for the produce. Owing to the straitened circumstances of the island, the botanic station has now been abolished, and the services of the gardener diverted to other duties, The work done at this station, with the limited means at its command, was of a distinctly promising character. It was the only organisation existing in the island for improving and extending the cultivation of industrial plants, and its abolition destroyed the hope of immediately benefiting the agricultural interests of the island."—*Gardeners' Chronicle*, Nov. 20.

PLANTING NOTES.

"LADY BIRDS."—We are pleased to see [that the Nilgiri Planters' Association has not lost its interest in the proposal to introduce the scale-eating beetles from Queensland. At a recent meeting, the Association offered to bear half the cost of "Mr. Newport's" scheme for their introduction. Surely other Indian Associations will follow—not to speak of aid from Uva (?) and Java.

TEA, COFFEE AND CINCHONA IN INDIA.—Supplementary to his Annual Report, Mr. O'Conor, Director-General of Statistics for India, has issued three separate papers dealing with the above products and giving the latest official information as to area, production, persons employed, exports and consumption, prices. A great deal is mere approximation; for Mr. O'Conor dealing with all India, cannot as yet approach for accuracy the statistical returns we have, for so many years, compiled for Ceylon in our "Handbook and Directory." Still Mr. O'Conor gives us the best possible, and we shall deal with his information in an early issue.

CACAO CULTIVATION IN CENTRAL AMERICA.—We call attention to a chatty account of personal experiences in Nicaragua, and especially on an extensive cacao walk in that State, by Mr. R. W. Carter, reproduced on another page. Our cacao planters may not learn much that is new from it; but they will find it interesting to compare notes with Mr. Carter, and they may discover some reasons for reflection in what is said about shade, pruning and harvesting. It is news to us that British Honduras should have rich indigenous cacao of a fine description growing along the river banks in some districts. Mexico has been long known for its production of cacao—indeed the seeds were a substitute for currency in some districts in the time of Montesuma; and now that English capitalists are going there in connection with coffee, they may see it to their advantage to develop cacao as well. Meantime Mr. Carter's paper, contributed to *Chambers' Journal*, will repay perusal.

A NEW COTTON—Mr. H. D. Carroll, a young American traveller, a few years ago discovered a cotton plant in Central Africa, the quality and abundant growth of which—says *The Chamber of Commerce Journal* for November—so impressed him that he brought a quantity of the seed with him to the United States. Extended trials have been made with this seed in the State of Georgia, and if the reports thereon are only approximately true, it would appear, according to a New York journal, that a revolution in the cultivation of cotton is approaching. The first trials were made in the State of Georgia in the year 1895. Of the seed then sown fifty-seven cotton plants were obtained. The seed procured from these plants has multiplied to such an extent that it is intended to make extensive plantations in 1898. The cotton plants hitherto cultivated in the United States grow from three to six feet high. Whilst these plants, particularly during the first stage of their growth, require extraordinary care, the African plants require only very little attention. The new plants attain a height of twelve to fourteen feet, with numerous fruit capsules, which after bursting, show cotton wool of distinguished quality. This new plant is uncommonly strong in substance and presents by far more resistance to rains than the American one. The picking of the cotton also costs considerably less than that of the American. Whilst in Georgia two to three acres of land are required to produce 500 lb. of cotton; the African sort produces three times as much.

Correspondence

To the Editor.

COCHIN *vs.* CEYLON COCONUT OIL: OIL MILLS AT BATTICALOA.

Batticaloa, Nov, 15.

SIR,—I have read the leader and correspondence in the *Observer* of the 10tb inst.—Cochin *vs.* Ceylon oil—with great interest.

It might perhaps interest you to know, that largo quantities of our best sun-dried copra are bought up by middlemen and shipped by native vessels to Cochin, to be made into "Cochin" oil. This refers mostly to copra made by European planters, who take greater pains to produce good, clean copra, than the villager does. I know also that a considerable amount of copra is shipped from Jaffna to Cochin. The mill-owners in Ceylon would turn out an oil, which would be quite as good as Cochin oil, if they would desist from making good clean copra with inferior stuff. On the estates I am in charge of, every bit of discoloured copra is carefully picked out and sold separately. Mill-owners, however, don't seem to care to pay a higher price for superior copra, and therefore most estate proprietors don't trouble much about the making of good, clean copra. Mr. Le Mesurier, I am glad to say, is putting up an oil mill here, and I also hear, that a similar establishment is likely to be started by another European. But I think, there will be no room for two mills, as even a small mill will consume at least 50 cwts. of copra per day.—Yours faithfully, C. L.

COCHIN *VS.* CEYLON COCONUT OIL.

Jaffna, 16th Nov. 1897.

SIR,—You complained some time ago in your paper that the cause of the great difference in value of tho Cocbin coconut oil over the Ceylon article, is due to the superior whiteness of the Cochin copra, which, in its turn, is owing to the fact that, at Cochin, the copra is dried more carefully than in Ceylon. It may interest some of your readers,—merchants in particular—that, in the Jaffna district, owing to the dryness of the climate, copra is dried by exposure to the sun, as soon as the nuts are plucked, and it is, I believe, equal in quality to the best Cochin article. The oil made of it ought, therefore, to obtain as good a price.—Yours truly, B. L. MARTYN.

TEA CULTIVATION: SOME PRACTICAL QUESTIONS.

DEAR SIR,—With reference to the lengthy Enquiry being conducted in the columns of your paper I propose that you prepare and submit a few questions to the local scientific authorities such as the following :—

1. Is the *average* temperature of the soil lower on weedy land than on clean land?
2. Do the roots of the Tea bush become more clogged with moisture during the monsoon, on weedy land than on clean land?
3. Do weeds pick up the soluble nitrates more easily and rapidly than do the roots of the Tea bush?

I venture to suggest these questions as samples of queries that I think should be dealt with by our recognised authorities.—Yours faithfully.

INDIAN PLANTER.

GEM-MINING IN CEYLON.

Nov. 24th, 1897.

SIR,—I am glad to see by the editorial article (see page 379) that you point out the importance of the gem-mining industry to the trade of the island.

It is my belief, when accurate returns can be obtained, as the result of washing on a large scale, that the value of the gem-bearing deposits will be found to be far greater than has hitherto been conceived. Gems are never evenly distributed throughout the gravel beds where they occur and as a necessary consequence, washing on a small scale becomes a matter of chance. A rich spot may be hit on at once, or tons of barren gravel may be encountered and the work abandoned perhaps, as unproductive. On the other hand, washing on a large scale and without risk of loss either by theft or accident, renders the result a practical certainty, as the rich spots are sure to be reached from time to time and if the work is economically and regularly carried on, the "finding" over the whole will seldom be otherwise than highly satisfactory. If this view is correct, and the coming Geological Survey brings to light, as it no doubt will, districts rich in gems but hitherto lying unworked, the importance to the general trade of the island can hardly be estimated.

It is this consideration that has caused the Ceylon Prospecting Syndicate to be called into being and I am glad to see these views stated by one so familiar with the subject as yourself.

It is quite true that Mr. A. B. D. Goldie will shortly leave England for Ceylon, and the first large plant, which has now been built and thoroughly tested here, will follow him at once. A series of machines capable of dealing automatically with 60 tons or so of gravel per working day required care in manufacture, but the result has been satisfactory, and the seeming delay you refer to, will be found to be fully warranted when washing commences on the ground. This plant has been kept per work in London for the last month and has fulfilled all expectations with regard to it. We are sending you by this mail, copies of some of the technical journals which described it, as I feel sure they will interest you.—I remain, sir yours faithfully, WM. S. LOCKHART,

M. Inst. C.E., M. Inst. M.E. Managing Director, The Ceylon Prospecting Syndicate Ltd.

THE CEYLON GEMMING INDUSTRY.

BY A WORKER.

SIR,—As I had ten long years of Gemming life in the Southern Province, allow me a little space in your valuable columns, to throw some light on the gemming operations in Lanka, in a small as well as in a large scale.

The beginning (of course) was on a small scale, and owing to bad luck and thieving, the result was not a favorable one; after this with the help of Mr. C. P. Hayley of Galle, we got up a Syndicate and went Gemming on a large scale in Morowakkorale. This would have been a paying concern if I had been supplied with proper machinery, and owing to this lack it turned out a failure. Thieving in the gemming operations is carried on in Ceylon, by the coolies in the small as well as in the large scale, not only where European management is employed, but even amongst natives themselves. At the washing time is not an easy job for them to steal, as there goes only the small gems and the watching is kept on keenly, but most of the gems are stolen at the time of the disintegration of the gravel, where a large gem cannot be hidden in the mud, but as in the gemming pits, there is always water, so the large gems left clear showing their beautiful colour, so if it happens that the supervisor turns his eyes into a different direction, the gems will fly into the opposite way, the natives having many different tricks to let a gem disappear.

I do believe, that the new model of the Gem Separator will be good to a certain extent, but there are many other things to look into.

Generally gravels where gems are contained are not found on the surface, in many instances they must be dug several fathoms deep before they come over the gravels or (illama) as it is called by the native diggers, then the quantity of gravels secured by that pit, will be ten or twelve tons at most, then a fresh pit must be dug out, with this operation it will pass a month before you can secure a day's work for the Separator.

These given details are only preliminary. Now comes the trouble.

The people who go to dig or to desintegrate the gravels, are experienced diggers, the greatest villains and thieves in creation. After having broken the gravels they have to fill up the baskets and they are from hand to hand and are thrown out and put in a heap. And then they are filled up again and sent to the washing machine. After having passed so many hands, if a good gem had escaped detection from the coolies, you can say that it is a miracle. I am sure of this, because, I, and others employed under me, were watching very carefully, and many valuable gems were stolen by the coolies employed. Then it comes that, that the most of the gemming lands are paddy fields, where heavy loads cannot be taken across as the soil is swampy. Gemming operations in Ceylon are not an enterprize for Europeans as the facts have shown not long ago, that one after another, all the Gemming Companies have failed with heavy losses.

It is true that natives are gemming here and there; first of all they know all the tricks as to how a gem can be robbed; second, they have many trustworthy relatives to watch; third they have very little expenses to meet and in many instances they only feed the coolies. When they come across some gems, then they pay something to the coolies and the rest is pocketted by the Ralahamy or Locoo Mahatmeya.

These are facts, and not made-up stories.

The Prospecting Company may turn out a success. To do so, first of all their agents must learn the native language; second, they must acquire experience, then it will give a good return to the Company; but I fear that by elapsing such a long time—which means money—it will be too late.

The Company will be successful at the very beginning if they engage a trustworthy and experienced man—not otherwise.

If I had not given up Gemming and come to Colombo, to reside here, and carry out my profession as a watch-maker, I would have been always hardup. Many who know me, not only in the Southern Province, but in many other parts of the island, will confirm that this is nothing else but the very truth.

I hope that the new Company will overcome all these difficulties and will be a successful one, but no one can assure me that they will not fail.

A. DE DOMINICO.

THE FIBRE OF CALOTROPIS GIGANTEA:—WARA OR YERUKKALAI.

Vannarponne, Jaffna, Nov. 17.

SIR,—On reading in *Observer* of the 2nd November regarding *Calotropis gigantea*—Wara (Sinhalese), Yerukkalai (Tamil) cultivation and its use as a fibre plant, certain suggestions offered themselves to my mind which I wish to communicate to your journal and thereby make known to the planting community who are interested in its cultivation. Some six years ago Mr. F. A. Fairlie was deputed by the Director of a Manchester firm to see whether Wara cultivation could be carried on profitably in Ceylon. I then accompanied him through the Wanny district and we satisfied ourselves that the plant grows wild and that with proper management it will thrive well in the lowcountry.

Mr. Fairlie had to leave for England owing to urgent private affairs and nothing could be done further than to try the experiment on a small scale on "Temple Bar," Sir Græme Elphinstone's estate on Pallai, which was then under my management. The cotton produced on the estate was sent to England and was pronounced excellent. I have seen fishermen getting the fibre and making ropes out of it for their nets. Had even Sir Græme been in Ceylon at the time, I am sure the Wara cultivation would now be an accomplished fact and in full swing in the lowcountry.

The cotton obtained from the plant is of greater value than the fibre which must be considered as of secondary importance. It is of very fine quality and is much in demand and will find a ready market. I send you a sample of the cotton which you will find on inspection of the quality I describe.* It adds an increased interest in the cultivation, for it turns out to be doubly productive and large areas that lie undeveloped in the lowcountry can be turned to use if Government will grant reasonable concessions. The plant is never allowed by the natives to grow in gardens as it exhausts the soil and sucks up all manure. They uproot it whenever it is grown, for the winged seeds find their way to all parts of the land and plant themselves.

Your correspondent's suggestion to cultivate it on road sides and to supply the vacancies in tea will prove, in my humble opinion, detrimental to the staple industry of the island. Instead of proving an additional revenue I fear it will stunt the growth of tea plants and exhaust the soil.—I am, sir, your obedient servant,

M. CATHIRAVALO.

We find the following in the *Journal of the Imperial Institute* by this mail:—

THE FLOSS, OR "SILK-COTTON," OF *Calotropis Procera*.

Calotropis procera is a shrub found in the drier parts of India, chiefly in the sub-Himalayan district, from the Indus to Jhelum; in Central India and the Deccan; and distributed to Persia and tropical Africa. *Calotropis gigantea*, a species only doubtfully distinct from *C. procera*, and which has the same vernacular names, is recorded as identical in its properties and uses. The sap yields a form of gutta-percha, and is also used as a tan and dye: a manna is said to exude from the plant; the bast fibre and floss from tho seeds are well-known fibres; the root-bark and sap are medicinal; the wood is used for gunpowder charcoal; and various parts of the plant are employed for sacred, domestic and agricultural purposes.

These plants, *C. procera* and *C. gigantea*, yield two distinct fibres—(1) a silk cotton from the seeds, known commercially as "madar floss," and (2) a rich, white, bast fibre from the bark. The floss is soft, very white, and has a beautiful silky gloss; it is employed to some extent, like the Dutch "kapok," for stuffing pillows, but has generally been regarded as of too short staple to be spun, although as regards its possible use in this direction, a Lancashire spinner stated, at the time of the Colonial and Indian Exhibition of 1886, that he had overcome the difficulties, and was prepared to purchase any quantity. But, as the plant is only found wild, scattered over a wide area, the supply is limited and irregular. If it can be cultivated, there seems to be no reason why a regular supply should not find a market at a remunerative price, and, at the same time, by bestowal of attention to the cultivation and selection of seed, the character of the floss might be improved and its length of staple increased.

The attention of the Scientific Department of the Institute having been directed by the Government of India to the possible utility of this floss, it has been submitted to examination by Mr. C. F. Cross, Scientific Referee on Fibres to the Imperial Institute, and the following results have been obtained. The more important constants of the fibre, which has

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* A sample sent to us indicates a very fine staple or floss.—ED. *T.A.*

the chemical characteristics of lignocellulose, are as follows;—

Moisture	.. 9·0 per cent.
Ash	.. 3·0 „ „
Hydrolysis	(Alkali, 1 per cent. Na O H), 26·2 per cent. (loss).
	(Acid, 1 per cent. H_2SO_4), 24·7 per cent. (loss).
Cellulose	.. 69·8 per cent.
Furfural	.. 19·5 „ „

Mr. Cross states that this floss fibre is an extremely interesting chemical type containing as it does a very high and, in his experience, unique percentage of furfural. He is of opinion, however, that although use may be found for some applications of floss fibre, its somewhat unfavourable chemical characteristics are not likely to recommend it to the spinner, in view of the present low price of cotton.

The floss has also been submitted to the Expert Referee to the Institute on Fibres, who has reported that this floss was in considerable demand in the markets a few years ago for fancy textile purposes, but that, owing to the difficulties presented by the variations in the quality of the parcels supplied, and to the intermittent supply when requirements arose, the material has dropped out of use. The quality of the Indian growth has, so far, proved inferior to the product of Java, which is probably derived from *C. gigantea*, and of which small samples have occasionally been received from India. The present specimen was of fair colour, of rather short staple, somewhat towy in character, and contained an excessive quantity of inferior, immature fibre and seed fragments. Many varieties of the floss in question have been dealt with, most of them from Calcutta, where it is sometimes called "akund cotton," which were usually inferior to the present sample. These samples were sold at as low a price as one penny per pound, and there was but little demand for them at the price. The trade in this floss might possibly be revived if a moderate and continuous supply could be guaranteed. If of good quality, it would realise prices ranging from 4d. to 5d. per pound (c. f. & i. terms). In packing for sale, the floss should be handled as little as possible, the pods and seeds being entirely removed and the floss left in its natural condition—unopened; any discoloured portions should be removed and forwarded separately. The bales received here from Java usually contain 80 to 90 pounds of floss tightly sewn in canvas, but not pressed.

"WARA" FIBRE: CALOTROPIS GIGANTEA.

Nov. 30.

DEAR SIR,—With reference to your planting correspondent's note, (see page 477), how can the cotton of this plant be said to have valuable medicinal qualities? Is it made into 'cellular' shirtings and 'war(r)anted' to prevent chills?

I sent home a sample of this fibre some ten years ago unnamed. It was prepared by hand, regardless of cost, and the brokers classed it as the finest Rhea, value, I think, £36 or £38 per ton. I do not remember the percentage of fibre from the weight of stems cut, but it was rather higher than that from Rhea stems obtained at the same time: the latter were grown, though, under shade. The *calotropis* would doubtless be improved by cultivation. The plant is very common over large tracts of our low-country, growing often in poor soil and springing up frequently in abandoned chena lands.

The medical profession, when they have leisure and inclination to examine this and other native drugs, may find "Wara" of some value: the milky juice is often used as an application in cases of rheumatism and as a blister for liver complaints and for coughs.

If the Director of the Royal Botanic Gardens would send home a bale of the silky floss obtained from the seed-pods, we should soon know whether this product was worth collection, but I fear he has no funds for experimental work of this kind.—Yours faithfully, B

HOW TO ECONOMISE LABOUR ON ESTATES.

SIR,—It seems at first sight venturesome, if not absolutely reckless, for anyone to undertake to criticise the opinions of an Editor, and especially of one having practical knowledge of this subject as an estate proprietor. But there are many questions, in connection with the discussion which has recently taken place, which naturally hinge on the points that have been specially brought forward for debate, and it is to these that the writer more particularly invites attention. As with other Examination papers, there is a natural tendency to stray beyond the limits of the questions set: indeed to answer them all fully, with all their collateral issues, would involve the compilation of a Treatise on estate management. Many of the contributors have been very careful to avoid going beyond the bounds: some no doubt with a wish to be precise, other apparently because they felt they were on dangerous ground. With the country flooded with "Experienced" creepers who have paid their trainers' board expenses and premium for twelve or eighteen months, and are eager to drop the opprobrious title of creeper for that of assistant superintendent, it is hardly safe for any planter, unless he has special interest with his employers, to breathe a syllable which might be construed as a reflection on the existing state of affairs. He must agree with Pope, "Whatever is, is best!"

The circular issued by the Editer of the *Ceylon Observer* contained queries with reference especially to the labour supply on *Tea* plantations, but as many estates comprise, in addition to tea, considerable areas of coffee, cocoa, cardamoms, etc., it will be convenient to treat the questions as applying to all estates on which Tamil coolies are employed.

As regards the first question: *Wire Shoots.* The advantageous use of these may in some few cases perhaps depend on the situation of the coolies' lines. If the lines are near the factory and the estate a small one, a wire shoot for the transport of leaf might be of no advantage, but on very many estates there is no doubt that shoots might be erected and would effect a large saving in transport of leaf, grass and firewood. Anything that saves the labour force from extra work in the evenings is certainly worth consideration.

2. *Labour-saving appliances.*—There is room, as many contributors have shown, for more appliances in factories: some seem to be always muddled Withered leaf, for instance, is often carried by coolies. from the withering shed to the rollers, exposed to the outside air; in other cases it is carried downstairs instead of being passed through the floor into the roller's mouth. Able-bodied men, who might be employed at pruning, or sawing and splitting firewood are often to be seen in the factory doing work that would be better done by children.

For field works, the more extented use of single bullock carts, hand carts and porters' barrows, for transport of leaf, manure, grass etc,, is very desirable. The objection to bullock carts on some places is that grass is required for the cattle, and the modern mania is to plant every yard of ground (except the Tennis court,) with tea, from the boundary right up to the bungalow doorstep. For this reason on many estates, no space is allowed to the coolies for vegetable gardens, and the Superintendent must live on condenced milk and feed his horse on straw as every ravine has been drained and cleared of grass.

3. *Tramways.*—There is little prospect of these being used except on large estates in the lower disitricts, and as long as coconut estate proprietors with their special facilities of level ground and large, acreages, do not adopt them, it seems hardly possible that they would prove economical for Tea unless a large group of estates combined for their construction.

4 and 5, *Weeding*: 7, *Drainage.*—The majority of planters in favour of the present system of weeding appear to be actuated solely by the fear of losing their labour force, if any change were made. This

would, of course, be a sad result from afforts to "economise the existing labour supply;" but the question is a wide one, and some points in connection with it have been altogether unnoticed. We must all admit that with this question, as with many others, different methods may be necessary in different districts, but speaking generally, the following bases will be agreed upon (1) monthly weeding, instead of three-weekly, as giving less trouble to the superintendent, and (2) payment of R1·00 per acre as an average minimum. Fifteen or sixteen years ago, when the rupee rate was first introduced by a Colombo estate manager, the suggestion was met with howls of derision as an utter impossibility. And this was when coffee was the principal cultivation, nearly covering the ground with its horizontal growth! Varying rates were then in vogue, from R1·50 to 2·50, or more, per acre, but the weeding contracts were then, as now, looked on more as a means of drawing regular weekly supplies of rice than for making money.

First, as regards monthly weeding. This system was adopted naturally in the beginning as being most convenient, and it has many advantages when properly attended to. But the contractor is frequently left to his own devices: there is no proper supervision (on many estates, the weeding coolies do not even come to muster), and when the contract, through their bad work, illness or idleness, gets behindhand, it often happens, as the contractor has frequently shrewdly foreseen, that the superintendent is unable to lend him any labour, all checkroll coolies being required for ordinary words. Result: the field *goes back* and the rate of pay has to be increased for some months. Sunday weeding is sometimes resorted to, the hired coolies being paid in rice or cash. It is on occasions like these when, without supervision, work is disgracefully scamped, and more harm done to the field than most people realise. Growing weeds are covered up with dead leaves or soil scraped over them: holes are scratched a few inches deep and bushes of weeds "buried" with a handful of soil, only to be washed off with the next rain: weeds growing near timber-belts, precipices or jungle are thrown hastily into them where they quickly take root and become nurseries of seeds.

Secondly, as to rate of payment, most planters appear to be under the impression that when their weeding has been got down to a rupee per acre they have touched bottom: it is not safe to reduce the rate further as the Kangani must be considered or rather his so-called Coast Advance Account. *This is the parosite which paralyses all estate work.* It is a remarkable fact that the gentleman (?) who invented tho "tundu" system, which has been the cause of all our modern labour troubles, has never yet come forward to assert his right to a statue or an annuity. When Hindu mythology has room for a new god, the chetties perhaps may elevate him, but he will probably go to his grave "unwept, unhonoured and unhung." Some planters argue that the rupee rate is incapable of being reduced, because the contractors always lose money in the wet months. They miss two points: weeds grow much less in cold, rainy weather, and the average contractor is not fool enough to retain a losing business. Were it not for the awful amount of advances outstanding, the average cost of weeding even on the present system, might be very considerably reduced, but it is a work, which, merely because it is done by contract, too often receives but little attention from superintendents. Too much power is sometimes allowed to a head kangani, the whole acreage of an estate being given him on contract. He will sublet the fields at perhaps half the rate paid him, and having the contract in his own name, he will keep their accounts, in a certain way, himself, and even where this mistake if not made, what a lot of room there is on most estates for more supervision. How often is the weeding of part of a field carried forward to the next month, and then repeated, instead of the contract being given to a better man; and how often is the weeders' use of mamoty and scraper winked at if not actually sanctioned on estates supposed to be weeded entirely by hand? On how many estates are cooty-sacks issued to the weeders, or when issued actually used for bringing weeds to the roads? We sometimes go out of our way to divide the weeding contracts into small fields, so as to give each sub-kangani one, at R10·00 or 12·00, though no single cooly, however conscientious (and these are scarce) can fairly earn so much in the average twenty days which they work in a month. So the small contract means either double payment or scamped work, the field if finished being done with the help of borrowed labour, often young children from the lines.

And what a waste of supervision (or loss of it) there is on the small contract! The kangani's wife or niece will saunter out at 7 or 7-30 a.m. (even if she has attended muster) and begin weeding when the sun is well up. If the field is too far away to allow of her going back to breakfast at 11, she will work on diligently till 2 or 2-30, when it is time to collect firewood. On any average estate she will by this time have collected all the vegetable luxuries, called by the general name of "keeri," which her family may require for curry, so that she can get back to the line easily by four o'clock to attend to her household duties. And for this work, or rather occupation, she is paid about ten rupees per month, perhaps more, though five would cover its actual value. If we were to work five or six of these small contracts together, with the same identical coolies to weed them, for a month, and an independent kangani to look after them, paid by results, what a shock it would give us! The head kangani would ask for his "tundu," or a further advance of R500!

There are two sides to every question, so having looked at this from the employer's point of view, let us now take a glance at it on behalf of the cooly. Many estates are not kept in such good order as they should be. Roads and drains are often scandalously neglected, through a mistaken policy of economy or through labour being scarce, and though many people do not seem to be aware of it this adds considerably to the growth of weeds. Some fields are from aspect, soil and situation more favourable to the growth of weeds than others: some have weedy, ravines and precipices with perennial supplies of seeds ripening in them, and jungle boundaries are a perpetual curse if weeds have been thrown into them. Other fields may be perfectly sheltered and shaded, but are often given out at the same rate as the most difficult contracts. Bad drainage means not only wash but weeds also. The least accessible fields are often the most in need of additional drainage, while boundary drains even on many old estates have never yet been cut. Some fields are very badly roaded and without weed pits have no convenient places for depositing the weeds. So much for the cooly.

A wider knowledge of the first principles of agriculture would be of use to many of us. How few planters apparently practically understand the objects and effects of draining, and the results of planting shade trees. With a more extensive acquaintance with what is really only elementary gardening, we should not so often see the cutting of new drains postponed indefinitely, the clearing out of drains neglected for months together or exposed fields of tea left without shade trees being planted throughout. The general planting of grevilleas and other shade trees, as some contributors have advocated, would, with regular attention to drains instead of the present studious neglect, enable us to reduce our weeding expenditure by nearly 50 per cent.

Though "selected weeding" in fields devoid of shade, very considerably reduces the wash caused by heavy rains, its adoption cannot fairly be made an excuse for lowering rates at first, as the mosses and small ferns require occasional regulation and removal from the base of the stems. The writer was able some years ago to reduce his weeding rates from R1·25 and R1·50 per acre to 75 cents, and the contractors made larger profits than under the old system. But the reduction was facilitated rather by extra attention to drains and to the weeding coolies, and also to the planting of cuscus and lemon-grass

on rocky hedges to prevent wash. The estate was a steep one and W. J. (No. XVIII) will perhaps, be interested to learn that the mosses grew luxuriantly even below 1,000 feet elevation.

As regards cuscus grass, another contributor No. (XXXII) complains that it suffers often from fungus, scale insect, and black bug. This is the case only when it has been carelessly planted; often with all its rootlets chopped off the plant is *shoved* into a small hole in perhaps stiff clay, without any pretence even of forking up the soil. It is a grass: it *must* grow! Cuscus or lemon-grass is much to be preferred to hedges of tea as a means of stopping wash or preventing drains being choked, but it should be cut regularly, and if not required for cattle bedding, be spread on the ground and, if possible, forked in.

INSPECTOR.

MR. T. N. CHRISTIE AND CEYLON TEA IN RUSSIA.

Kandy, 4th Dec.

SIR,—I enclose copy of a letter from Mr. Christie, acknowledging vote of thanks passed at a recent general meeting. I also send extract of a private letter from Mr. Christie as giving interesting information regarding his visit to Russia.—I am, dear sir, your obedient servant,

A. PHILIP,
The Hon. Secy,, Planters' Association of Ceylon.

(*Extract of a Letter from Mr. Thos. North Christie, dated 11th Nov. 1897.*)

I am leaving London about the 25th for Russia. I have already obtained a good deal of information, and am well provided with letters of introduction for St. Petersburg, Moscow, and Odessa, and the Colonial Office people are providing me with letters of official commendation to the British Consuls. I hope to be able to report by the 1st January.

Drumblair House, Forgue, by Huntly, N.B.,
11th November, 1897.

The Secretary, Planters' Association of Ceylon.

Dear Sir,—I have to acknowledge your letter of the 27th ultimo, giving cover to copy of a Resolution passed by your Association. I much appreciate the kindly manner in which my services, as M. L. C., are referred to, and I beg to thank the Association therefore.—I am, dear sir, yours faithfully,

(Signed), THOS. NORTH CHRISTIE.

RICE FROM SOUTH INDIA.

Glenomera, Talawakelle, Dec. 4.

SIR,—I am in receipt of a letter from Capt. Shelley, General Manager, South Indian Railway, from which I quote as follows. Date 29th ult.: —"The through rates we quote for a bag of rice not exceeding 190 lb. in weight include Indian export and Colombo import duties, Colombo harbour dues, and all other incidental charges. Provided the bags of rice do not exceed 190 lb. in weight, our rates cover *everything* after receipt at one of our stations to arrival at station on the Ceylon Government Railway. It may interest you to know the actual details of the harbour and Customs charges included in the through rates which are as under:—

		R.	A.	P.
Pier dues at Tuticorin	..	0	0	2
Export Customs duty at Tuticorin	..	0	6	9
Harbour dues at Colombo	..	0	1	3½
Import duty at Colombo	..	0	13	5
Landing at Colombo and loading on carts		0	1	1½
Total		R1	6	9

(say R1·42½ cts.)

Captain Shelley suggests that the writer should pay a personal visit to the Taujore district, when he has little doubt that business might be done with a great saving of time and money. For the information of the public he states that cheap excursion tickets for the Christmas holidays between Colombo and Madras are to be issued by his Company. The cost of S.I.R. time-table (to be procured from the Company at Trichinopoly) is 2 annas or 12½ cents Ceylon currency.

So far Captain Shelley, to whom our thanks are due for this information. It will be apparent that the cost of transport of rice by this route compares very favourably with that of sea-borne rice as estimated by Mr James Gibson, whose large experience of the rice-trade, places his figures above suspicion.

Taking the 190 lb. bag of rice at 2¾ bushels nett (it really amounts to a little more) it will be seen that the rate of transport to Bandarawella amounts to R5·02 cents per bag or R1·82½ cents per bushel, as against Mr James Gibson's estimate of R1·97—delivery charges by sea and Ceylon Government Railway at the same spot, a saving of 14½ cents per bushel.

It is therefore clear that South Indian rice can compete with sea-borne rice in the matter of transport rates, and I am informed that in January, 1896. the cost price of rice at Tanjore was slightly under R2 per bushel. This rice might have been placed at Bandarawella at R3·82½ per bushel as against R3·95 for Calcutta rice purchased at R2. I am also informed that the rice in question was Mootoo Samba and Kaluuda, which are superior in quality to the average Soolye rice given to coolies.

Under these circumstances it might be advisable for some one to go from this side to Tanjore about Christmas time and purchase a trial shipment of rice, and I shall be happy to join a small syndicate of not less than ten members to purchase 1,000 or more bushels of rice at a cost not exceeding the current Colombo rate. I regret that I cannot spare the time to go myself, but there will be little difficulty in finding a more efficient substitute.

I must apologise for trespassing so far on your space, and the patience of your readers, and remain, yours faithfully,

JAMES RYAN.

AN INSECT ENEMY OF TEA.

Dolasbage, Dec. 8.

DEAR SIR,—Under separate cover I send portions of tea branches killed by a borer. You will see the borer (resembling a weevil) eggs &c., in and on the branches. You can also see the perforations on the outside of the branches, through which the borer enters. I have referred to a work on tea pests, but nothing resembling this is shewn.—Yours faithfully,

WALTER R. TRINGHAM.

[Our reference to the Honorary Entomologist has brought the following:—

"The insect is a scolytid beetle,—by name *Xyleborus fornicatus, Eichhoff*. It was described and figured in the 'Indian Museum Notes' Vol. IV, No. 2 page 37, from specimens sent by me in 1895, which specimens were obtained from the same district viz., from Craighead Estate, Nawalapitiya. The article from the 'Indian Museum Notes' was copied, (with description of this particular pest in full) into the *Tropical Agricuturist*, September 1897, Vol. XVII page 207."

Our correspondent has no doubt his *T.A.* by him to refer to—it ought to be filed in every Tea Factory in Ceylon; and if Mr. Tringham, requires further information and advice, he should consult Mr. E. E. Green, the Hony. Government Entomologist. —ED. *T.A.*]

TEA PLANTATIONS: WATER-HOLES AND FORKING.

Dec. 11.

DEAR SIR,—When reading over the replies to your query No. 7, I note that "S. E.," "N. H." and perhaps others advocate the old system of water holes! Surely they have little or no experience of the result?

In the old coffee days we cut trenches, say three feet long, one foot broad and 15 inches deep, on the face of a hill field in Dolosbage.

There came a heavy downpour of rain, after a few days' light rain: here and there, one of the holes became full and commenced to run over; this caused the next one below it to do the same with increased volume; each succeeding hole added volume and force to the rush of water. Hundreds of tons of soil were washed away, down into the drains, roads and ravines. The lines in that field ran as perpendicular as the hill would permit; consequently the scour was chiefly down between the lines of trees, but in many places the trees were left on stilts!

I give this one particularly bad instance. But I can point out hundreds of acres of land now in tea (formerly in coffee when the holes were cut) and the ledges still remain (2 feet square or so) showing what was the bottom of the old holes; there being the original hill slope between these ledges. All the soil excavated was soon washed away, once the holes began to fill and became shallow enough to run over in wet weather.

Another writer states that "forking would cause too much wash."

Forking causes no wash if properly done. But forking and draining may have and do have ill effects on free soil in districts subject to long droughts. For that reason I have heard of drains being filled in again.

Forking in stiff soil, with tram forks, driving the fork as deep as it can go (15 inches to 18 inches) into the ground: then merely shaking the fork sufficient to loosen the soil between it and the spot it had last been inserted has a wonderful effect. The fork must be drawn out carefully, not pricked, no turning over of the soil. The surface remains as it was excepting that the humus and loose surface soil slips into the cracks, and hard lumps crumble as you walk upon them.

In very stiff clayey soil a light sprinkling of unslaked lime before the forking has a beneficial effect.

The foregoing is the result of many years practice.—Yours faithfully, VETERAN.

THE MODERATE PRUNING OF TEA ADVOCATED.

Dec. 12, 1897.

DEAR SIR,—That you did a world of good by publishing those 84 letters on "Plucking, Pruning and Cultivation of Tea," there cannot be a doubt, and your reviews on the same were fair and pertinent. I am not coming forward with a "Review of Reviews," but if you will allow me a little space, would like to revert to one of the topics discussed, viz., pruning or overpruning. Of the 84 writers, 56 were against the hacking down system, 22 alluded to the matter but slightly, three favoured severe cutting down, and two favoured it apologetically. Of the 56, some went the length of saying the tea made after excessive cutting down could not regain its former excellence in less than twelve months. Others mentioned periods of six to ten months. Different elevations, of course, regulate that considerably. But what about the cut down bushes? In some cases hacked in almost to the collar. I maintain that they are permanently damaged. The property deteriorated for all time. In such cases nature makes an effort, especially when the tea is not very old to make up her loss, a cluster of wiry shoots springs up close together, because the breadth has been cut off. The wood is slender and weakly, the leaf small, the coolies cannot bring in their former task. The work is thus costlier. The tea made has neither colour, flavour, nor strength. Bad reports come from London. The directors, would never think of attributing blame to their V. As. who directed the cutting down. The superintendent must be made the scapegoat. I am not setting up as the superintendent's advocate however; but in such cases, I pity shareholders whose properties have been so reduced in value, and dividends curtailed, they all the time ignorant of this, as one great cause. That the system is fast running itself out is clearly proved by the great majority of those 84 experienced writers; but there is still to be seen, sadly mutilated fields, low narrow rows, instead of the once strong spreading bushes, the coolies stooping to pluck as if gathering strawberries, and the half-exhausted bushes looking as if in need of pruning again in less than nine months.—Yours faithlly, "MODERATION."

PAPAYA JUICE.

Sumatra, O.K., Nov. 1897.

DEAR SIR,—I would be obliged if I could get any information regarding the mode of packing the dried juice of the Papaya tree and also the address of a proper person in London to give a report thereon. Perhaps some of your obliging readers will help.

Also the quantity of fibre obtainable from the pineapple in proportion to weight of leaf, or number of plants of the proper kind for fibre.

SUMATRA O.K.

[Our correspondent makes rather a wide order. In back numbers of the *Tropical Agriculturist* there is much information regarding Papaya juice and Pineapple fibre, and Mr. Thos. Christy, 25 Lime Street, London, E.C., will, we feel sure, be ready to report on any samples sent to him.—ED. *T.A.*]

MR. POPOFF'S TEA GARDEN AT BATOUM.

INTERESTING LETTER FROM MR. VALENTINE WEBSTER.

Moscow, Nov. 6.

DEAR SIR,—I arrived from St. Petersburg on the 2nd, and leave for Odessa on the 9th. I had a letter of introduction to Messrs. K. & C. Popoff, who own the largest tea packet business in Russia. I met Mr. Popoff, the founder of the firm and proprietor of the tea garden in the Caucasus mountains, today. The garden has nothing to do with the firm of K. & C. Popoff, of which he is chief.

Mr. Popoff has given me a letter to the superintendent of his garden, which is ten miles from Batoum, in the south end of the Caucasus mountains. He has many strange ideas, as will be seen from the following facts:—He has already planted 160,000 trees, mostly from China seed, with a few small patches of Assam, Darjeeling, Ceylon and Java. In the winter they have down to 10 degrees of frost; and in the summer it is very hot. Labour is 1s. 6d. per day and a free house! Mr. Popoff does not believe in machine-made teas and cannot understand why in Ceylon [and in India with our cheap labour, we will spoil our teas with machinery, when it can be so well done by hand!! He says hand-rolled teas are far superior: the difference

is as great as a tune played by a good orchestra, and the same tune by a German organ! Mr. Popoff does not believe in the Ceylon and Indian methods: those of the Chinese planter are far superior. At the same time he was much pleased with my pamphlet, "How tea is grown and prepared in Ceylon," and asked if he might keep one.

I sail from "Odessa," on the 13th, and arrive at Batoum on the 17th, and at Mr. Popoff's garden on the 18th instant.

Mr. Popoff is giving me a sample of tea made on his garden. This will be very interesting.

Few can have any idea how much behind the times this great city is: even the houses in the streets are not numbered. Cold weather has set in, and I shall be glad when I see the last of it and of Russia. I hope to be in Colombo the first week in January.—Yours, &c., R. V. WEBSTER.

—Local "Times."]

THE "WARA"

I have just got a tin of "Wara" seed from the Coast and intend giving it a trial. I send you by same post a little sample of the "Wara" cotton, which is said to have very valuable medicinal properties. It looks very fine.—*Planting Cor.*

PLANTING NOTES.

TEA CULTIVATION AND PREVENTION OF WASH.—We can only now direct the attention of Estate Managers and Proprietors to the very suggestive letter, which Mr. E. E. Green sends us on the subject started in our columns by a veteran planter.

OIL ENGINES.—With the rebate on Kerosine oil coming into force from the beginning of the year, there ought to be a considerable run on "Oil" Engines of the type that has already given satisfaction. It was the nonsuccess of "Priestman's" in Kandapolla, we think some years ago, that gave a bad name for the time and left an unfavourable impression on our mind as to Oil Engines. But there have been evidently great improvements in other inventions, as may be seen from what is stated by Messrs. Walker Sons & Co., Ld. in reference to the "Campbell Oil Engine." One of these—9 horse-power—we learn, is to be erected in Colombo shortly to drive rice-hulling machinery and we have no doubt it will be an object of interest to very many in search of a reliable, simple and cheap motor.

TRADE ALLOWANCES ON TEA.—"Udapussellawa" writes to a contemporary:—"One pound per package, on full chests amounts to say 1 per cent, each chest containing roughly 100 lb. tea, but 1 lb. a package, on half-chests amounts to 2 per cent. This is most unfair for several reasons. Packing in half-chests is more expensive per pound than in full chests. Half-chests are more suitable for grocers, and therefore, more attractive for buyers. Several producers are obliged to pack in half-chests, owing to the distance they have to send their tea on coolies' heads to the nearest cart road. Thus in fairness half-chests, should be taxed at a lower rate in London, as they cost more in proportion than full chests, at any rate they should not be taxed by the buyer at a *higher* rate than full chests, which is being done at present."—We think this proposal a very reasonable one, and one that ought to be taken up by the Tea Committee of the Ceylon Association in London.

THE "CEYLON FORESTER," a quarterly magazine so Forestry, Natural History and Shikar. Edited by H. P. C. Armitage, Assistant Conservator of Forests, Colombo. Contents for the 3rd quarter, 1897, are as follows:—Ourselves; On Ceylon Ferns; The Girdling of Trees; A Tour in the Western and Sabaragamuwa Provinces; Feather Shooting in Ceylon; Reviews; Administration Report of the Royal Botanic Gardens, 1896; Practical Hints of Forest Zoology; Collection of "Dorana Tel" or Bambarabotuwa; More about Raobab Trees; Cobrain Stray Notes; Tit Bits on Forestry; Notes on Ceylon Birds.

GEMMING IN CEYLON.—Mr. W. S. Lockhart and Mr. Goldie cannot fail to be interested if not edified by the letter which Mr. A. De Dominico—the well-known Colombo watchmaker—sends us and which is reproduced on page 471. Allowance must be made for the use of what is, practically, a foreign language to the writer and then it will be found that the letter gives some practical information. It is quite possible that the Prospecting Company may devise some method of excavating by machinery to get over one difficulty pointed out by our correspondent. But if not, the risks of loss cannot be nearly so great with a Separator as under the old system. Still there are difficulties before the new experiment; but we may hope to see them overcome by the combined ingenuity of Messrs. Lockhart and Goldie.

RAPID GROWTH OF THE CEYLON TEA TRADE: A RECORD!—*Pearson's Weekly* of Nov. 20, in its column for queries and replies asks "State which is the Most Striking Instance of the Rapid Growth of a "Trade." The reply is as follows:—

Taking the word "trade" in its widest sense, the answer would be the trade of Ceylon. In 1883 Ceylon produced only one million pounds of tea. In five years this grew to about twenty millions. The reduction of the duty in 1890 to fourpence led to an enormous increase in consumption of tea generally, and this has, of course, greatly stimulated the Ceylon trade. Five years later the output had risen to the enormous figure of 67,718,371 pounds. The history of trade affords no parallel to this development. Of course the cycle industry is a case in point, but that is rather the development of a branch of the long-established engineering trade than the creation and development of a new industry. Given this limitation, however, the growth of the cycle trade would make a good second to the development of tea industry of Ceylon.

Well done the first of Crown Colonies!

JAMAICA RAMIE.—Mr. Leon Bernstein, Managing Director of the Jamaica Fibre Company, Limited, having forwarded to the Imperial Institute, London, two samples of Ramie filasse, prepared here by the Macdonald-Boyle process—says the Journal of the Jamaica Agricultural Society—has received a most encouraging report from Sir F. A. Abel, Hon. Secretary and General Director of the Institute. The best of the samples was declared by Mr. E. E. Collyer, the Expert to whom they were referred, to be "very good quality degummed, excellent in colour, and yielding a large percentage of top." He adds: "Supplies represented by it would probably realize £60 per ton and upwards here, if sufficient quantities can be guaranteed." The other specimen, derived from very young stems, though not so satisfactory, was estimated to be worth £45 to £50 per ton. An extensive firm of Produce Brokers, having seen the samples, have written offering to take a quantity of filasse. A good market for the fibre thus seems assured, and we trust soon to hear that the Company has started planting operations.

Samples are a poor test after all: one would like to see a quantity turned out and to learn the cost.

THAT RIDICULOUS "COCOANUT."

THE EDITOR OF THE "DAILY CHRONICLE."

Sir;—In the "good long taste" you have today given your readers of Mr. Allen Upward's poetic quality, there is one "thing" described by that gentleman which can scarcely be characterised as "common." You quote Mr. Upward as referring to the A. B. C. shops.

"Whose air the rich aroma fills
That from the cocoa palm distills."

For Mr. Upward's benefit I may state (1) that the odour of the toddy distilled by the coco-palm is the very opposite of a "rich aroma;" and (2) that cocoa is a product of the cacao-tree (Theobroma cacao). But so long as the erroneous spelling cocoanut (due to a blunder of the printers of Johnson's Dictionary) continues to mislead the ignorant, so long must we expect such absurdities as that perpetrated by Mr. Upward.—Yours faithfully. DONALD FERGUSON.

Croydon, Nov. 6.

[The strange part is that botanists beginning with Kew, keep to the "Coco*a*nut" form of spelling of *cocos nucifera*. Emerson Tennent set the example of "coconut" in his Ceylon books, and we have adhered to it for many years in all our publications.—ED. *T.A.*]

THE CHINA TEA TRADE.

We reprint in our *Tropical Agriculturist* from a Hongkong paper, information which ought at once to edify and amuse Ceylon tea planters. The latter are already aware of the steps taken by a Syndicate through a regularly organised Factory to arrange for the preparation by machinery of all teas grown in the extensive tea districts around Foochow, and of the high testimonials put forward as to the value of "machine-made" teas. Now, however, the tables are turned. The Dutch Minister at Pekin, acting on behalf of Amsterdam tea importers—of all people in the world—has protested against the fine delicate flavour of China teas being destroyed by European machines,—lost in the many processes incidental to the Foochow factory,—so that if the new scheme is persisted in, it will be impossible to procure the highly-prized teas prepared by the old Chinese methods. This protest has been taken up cordially by the Chinese authorities and the resulting Proclamation to the Provincial and District Mandarins may, quite possibly, have the effect of keeping back a great deal of the tea-leaf expected at the Foochow Factory.

Meantime, the export of China teas this season seems to show a decided decrease all round, while that of Japan teas to the United States shews a comparative increase!

IMPORTS OF TEA SEED.

THE imports of tea seed at Colombo this season have been rather notable, considering the feeling that extension of cultivation had received a check though adverse exchange and low prices. The Customs returns are as follows:—

		British India.
September	..	— Nil.
October ..	..	Cases 137
November	..	„ 4,285
Up to 9th December	..	„ 2,434
		Cases 6,856

Each case of tea seed may be taken to represent a maund of 84 lb. with from 20,000 to 30,000 seed, and counting 15,000 plants as resulting from each maund, and 3,000 to 4,000 plants as covering an acre, according to distance the planted,—total imports should represent from 27,000 to 34,000 additional acres to be planted with tea!

SEYCHELLES VANILLA.

From official information supplied by the Colonial Office we learn that the vanilla-crop of 1896 in the Seychelles was the largest ever produced in those islands, viz., 63,000 lb. As the prices ruled higher than for many years past, the planters have done so well by this crop that they have very greatly extended their plantations. Moreover, the country is now being opened up by new roads, and many thousands of acres of virgin soil suited to vanilla growing, but now uncultivated, will shortly be made available. In the district of the Mare aux Cochons alone there are about 5,000 acres of this kind. The cultivation of vanilla in the Seychelles dates back about 20 years, but it is only now beginning to be understood. Formerly the vines were trained on artificial supports, by the Mexican system of allowing the vines to grow wild has of late years almost superseded the old plan. It is said that nothing pays better than vanilla-growing. The average cost of production, including dry and getting ready for the local market in the Seychelles, is only R3 per lb. whereas the local sale price in 1896 averaged from R8 to R16 per lb. And as the average yield of dried beans per acre is 200 lb. it follows that there are few crops (certainly not sugar, the staple product of the Seychelles) which give the grower a better return. Most of the land in Seychelles is in the hand of private owners, but may be bought at from R100 to R200 the acre for ready money. There is also some land belonging to the Government well adapted for vanilla cultivation, which can be leased for periods varying from 9 to 21 years. In 1882 the yield of vanilla in the Seychelles was only 2,400 lb.—*Chemist and Druggist*, Nov. 27.

CALOTROPIS PROCERA AND GIGANTEA

"WARA" FIBRE CONDEMNED.

In the "Forester" for September it is stated that an expert is coming to experiment with the above-named plants, and G.M.R. asks for information or opinion on certain points. He probably knows as much as anybody about C. procera. To begin with a trifle, it is a very mild statement that the fibre has been known for 20 years or more. A fibre that is used to the exclusion of all others for every important purpose, except clothing and large ropes, for which it is not common enough, must have been known to the people of Alexander's time, if not of Noah's, and the poor young merchant adventurer who left his bones at Tatta sometime about the middle ages had no doubt a practical acquaintance with it as we have. As to quality, it is stated that the fibres of both species are equally good. That is a statement that I have hitherto taken for truth, and have now to suffer certain qualms of conscience, because I knew the fibre of C. gigantea to be neglected in the Deccan, where it is common, and never suspected the possible reason, viz., its uselessness. However that may be, I found the fibre of C. gigantea quite useless in the Saharanpur District in the month of February. We have thus to find out when and where this species is worth gathering. That being the case it is little consolation to be told that this fibre gives a greater proportionate yield. As to cultivation, I considered the matter some twenty years ago, and came to the conclusion that it could not pay, and think so still, principally on the ground that the plant is of a straggling light demanding habit and could probably not be grown dense enough to give any considerable yield, but I made no experiments on the point, and that is the only reliable source of information.—F. GLEADOW. —*Indian Forester for November.*

THE ANGLO-CEYLON ESTATES DIVIDEND.

(To the Editor of the *Financial News.*)

SUGAR-PLANTING IN MAURITIUS: A NEW VIEW OF FREE TRADE PRINCIPLES.

Sir,—A short time ago a feeling appeared to exist amongst those most interested in sugar planting in Mauritius, that as soon as the cable was repaired the principal conclusions arrived at by the Royal Commission which went to collect statistics of the sugar industry in the West Indies would be cabled to most parts of the world; for a rumour had obtained credence that its report would be published about the end of July. Up to the present time, however, nothing has been communicated, and the news received by the last mail is in no way assuring that we shall be placed in presence of the Commissioners' views at an early date. Mr. Chamberlain has stated that he declined to put any pressure on the members to hasten the issue, as he has no wish to hurry them in a matter of so great importance. The suspense is irritating to many proprietors, who feel that a sword is hanging over their heads, and are anxious to know the worst. We think that these should take heart at Mr. Chamberlain's change of front. At one time the Secretary of State for the Colonies appeared to think that the bounty question was one in which the Home Government was not called upon to interfere, but it is evident that of late he has adopted other views, and a large number of those who have carefully weighed Mr. Chamberlain's recent utterances on the question conclude that whatever may be deductions arrived at by the Commission, he will, by some means or other, succeed in re-establishing confidence in the industry upon which the welfare of so many of Her Majesty's Colonies depends.

The report of the eleventh annual meeting of the Anglo-Ceylon and General Estates Company, Limited, which was published on September 7, has been read with much interest, and, so far as Mauritius is concerned, the operations of the Company during the past financial year were such as to call forth congratulations; but the fact of the Company having been in a position to declare a dividend at a time when foreign bounties were on the increase and the price of sugar materially on the decrease cannot strengthen the hands of those who have been deputed to safeguard the interests of Mauritius in their representations to the Imperial authorities of the difficulties she, in common with other sugar-producing countries, has to contend against. The local manager in Mauritius stated that the equipment of the estates was first rate, and that they had been made to yield a profit owing to the great economy that had been exercised. So far as I am able to gather from the report, if the management be efficient it is possible to keep the sugar estates in good order and to make them yield a profit, even with the ruling bounties and the low price of the staple. There are, however, experienced planters in Mauritius who, knowing the company's estates, are not a little surprised at the figures that have been published setting forth the cost of production per ton. A solution may be ventured by supposing that two accounts have been amalgamated, viz., that of operations on the estates proper and the purchase of canes from planters. Should such be the case, it can be easily understood how the cost of production appears so low—that is, if large quantities of cane were purchased from planters; for it is well-known that there is far more profit made in buying canes for manufacture than there is in growing them. It may be said that the shareholders are indifferent as to how the accounts are made up provided the estates are kept in good order and a dividend is declared; but by the amalgamation of the accounts of the two transactions referred to a fictitious value is given to the properties, as, should planters' canes be unavailable for purchase, the figures showing the cost of production would be sensibly enlarged. Mr. Quinton Hogg's definition of what he conceives to have been Cobden's ideas on Free Trade appears to be a rational one; each industry was to stand on its own merits—that is, the result placed on the market at the natural cost of production. Anyone who may be sceptical as to the advantages of Free Trade has but to read the Cobden Club's official report, in which are published "Facts relating to Fifty Years of Free Trade," to be convinced of the efficacy of the principle, and, in a measure, to condone Mr. Gladstone's recently expressed views on the sugar question; but, as has so frequently been pointed out, to admit produce or manufactures that are subsidised is an infringement of the principle and productive of ultimate loss to the Governments which give the subsidy and to those which complacently accept the departure from what should be international commercial law. The result of the Mauritius local managers' economical administration, as portrayed in the company's last report, is an object lesson—one that carries with it the conviction that, as regards the sugar industry, the devil is not so black as he is painted?—Yours truly, A PLANTER.

Mauritius.

PRODUCE AND PLANTING.

THE TRADE IN BRICK TEA WITH TIBET.—Yatung is the town on the Tibetan side of the Jalep Pass, between Sikkim and Tibet, which was opened to Indian trade by a recent convention with China. A branch of the Chinese Maritime Customs has been established there, and the report on the trade of the place for the past year is interesting reading. It is published in the Yellow-book of the Chinese Customs. At one time there was a considerable traffic between Tibet and Sikkim in brick tea; but no sooner was Yatung declared an open mart, and the question of introducing Indian tea across the frontier mooted, than the passage of Chinese brick tea into Sikkim was prohibited by the Tibetans for some inexplicable reason. Reduced supplies still reach Kalimpong and Darjeeling through Nipal and by other routes. Four kinds of brick tea are still to be purchased in the Chumbi valley at prices which are moderate when it is remembered that the tea has to be carried on pack animals ninety days' journey from the producing districts in Szu-chuan. The lowest quality, which is the tea of the masses in Tibet, is described as veritable rubbish. "Tea flavour it has none, and on careful boiling and examination a brick is proved to consist of mouldy leaves, many of them 4in. long and longer, twigs, sticks 2in., 3in., or 4in. in length, and some of them as thick as a slate pencil; sundry hard lumps of decayed leaves which barely separate when boiled, and, in addition, sweepings, dust, and various dirt. As is well known, the Tibetan system is to positively boil tea leaves; in fact, to make soup of them, and to add salt and butter, or mutton fat, or cheese, just as the decoction reaches boiling point. Thus it is rendered palatable, grateful, and comforting to the native. So far as this quality brick tea is concerned, it may be safely asserted that to European tastes equally pleasant tea could be made from a spadeful of good leaf mould dug from under an old oak, and, if prepared in their own peculiar style, it is doubtful if the Tibetan peasantry would notice any difference in the brew." It seems that during last year 6,444 Tibetans and Tomos, chiefly the latter, crossed the Jalep into the Chumbi valley under passports, and 6,268 went to India from the valley.

PLEASANT IF TRUE.—The disclosures made by the man in the street are not often reliable, and we therefore print the accompanying paragraph, which has been going the usual round of such interesting tit-bits, without vouching for its accuracy. If there is really a trade in second-hand tea leaves it is not surprising that tea is considered by some people to be a noxious drink. Exhausted tea leaves do not inspire respect for tea, and they are not calculated to either cheer, inebriate, or do anything but make life dreary. We should say that tea leaves re-stewed are very bad for both body and soul, and we

trust in the interest of decency and health that the following paragraph is not a square and solid fact. "Yes," said a man who was collecting tea leaves in the street the other day, "I make a business of collecting used tea leaves. You wouldn't think there was much to be got out of this work; but as a matter of fact quite a good number of men in London make a good living out of it. In a few cases the used tea leaves collected from the better-class restaurants and hotels are sold to proprietors of third-rate restaurants and coffee-houses, who mix burnt sugar with them, and use them for tea-making a second time. The greater quantity of used tea leaves, however, are purchased by proprietors of very cheap groceries. The tea leaves are made ready for the market the second time by being spread upon hot iron plates. The result is that they curl up and present a very good-looking appearance; in fact, tea when recurled in this way looks quite as good as first quality tea that has never been used. And when it is packed in attractive-looking packets it has a ready sale."

ABYSSINIAN COFFEE.—In a report by Mr. Rennell Rodd, H M. Special Envoy to the Emperor of Abyssinia, recently published in the *Board of Trade Journal* for September last, it was stated that the indigenous coffee of Abyssinia is largely sent to Arabia for re-exportation as produce of Mocha. A question having arisen as to the above statement as regards Aden, a further report has been received at the Foreign Office from Mr. Rodd, stating that in his report the words "sent to Arabia" were not used to specify or even to include Aden, and also that it should be borne in mind that, besides the trade which goes directly to Aden from Zeila and Berbera, a great deal is carried in native boats to the Arabian coast; there is also, it is stated, a considerable movement of shows in the port of Gibouti.

VANILLA CULTIVATION.—Cultivate vanilla wherever soil and circumstances permit is the advice to be gathered from the report of Mr. H. Cockburn Stewart, Administrator of the Seychelles Islands, who, in forwarding his annual report, gives special prominence to the vanilla industry, which is experiencing quite a boom. The crop last year was the largest on record—63,000 lb.—and the prices obtained on the London and Paris markets were such as to delight the hearts of the cultivators. "Nothing pays better than vanilla," remarks the head of the Local Government, and, when the islands are still further opened up by roads, he anticipates a large increase of the acreage under vanilla cultivation.

BOWSTRING HEMP.—A plant at present found in great abundance in South Africa is likely, in the opinion of experts, to become an important article of commerce. This is "the Bowstring Hemp Plant." With the aid of a machine, which has been recently invented, fibres have been prepared from its leaves, which have turned out to be the strongest fibres yet known. This strong quality of the fibre was first discovered by the scientific experts of the Challenger Expedition, who used it to make their deep-sea lines.

PLANTING IN BRITISH CENTRAL AFRICA.—The *British Central African Gazette* has collected reports from various firms and planters engaged in coffee-growing in British Central Africa which point to the continued prosperity of the industry. It is estimated that for this year the crop will yield about 450 tons, and as every year new plantations are being opened up, and areas planted in previous years are coming into bearing, there is every prospect of the supply of coffee from Central Africa assuming very large proportions. One of the largest planting firms reports that "although nobody is yet able to lay down a single rule, we mean a hard-and-fast rule, much less any fixed laws about coffee-planting in this country, for the simple reason that the industry is too young yet, and we are without sufficient *data* extending over a number of years to go on, still from the experience of the last three years we may safely say that coffee-planting in British Central Africa is, or can be made, a perfectly safe, steady, and paying enterprise." Experiments are being widely made as to the best kind of shade trees for coffee bushes. Very few new planters have come into the country during the past year, but ten new plantations have been opened up.

LAND IN NEW GUINEA.—According to Mr. T. H. Hatton Richards, who has been lecturing on the subject, cultivators of land who know their business may find British New Guinea a profitable field. As far as was practicable, every inducement was given by the Government to the bona fide settler. All that legislation could do had been and was being done; but, so far, the attention to the country had been rather disappointing. Land might be found for almost every tropical product, but not in the vast areas that were dealt with in Australia, for instance. To the man with experience and a little capital, who chose a moderate quantity of land with care and prudence after personal inspection, good results should follow. He would find two great things in his favour. First, the country was never visited by cyclones. Secondly, with care and tact on his part he should always be able to obtain a plentiful supply of good labour at an extremely moderate rate. But the man who went to British New Guinea must be prepared to rough it in the truest sense of the word, be ready to put his hands to anything, and wait patiently for the fruit of his labours. The chief difficulty to be encountered was the one of climate, and as to this he thought it might improve in time as the possession was opened up for settlement, and it became possible to use the hilly portions of the country for purposes of change.

HONDURAS AND ITS PRODUCE.—Honduras, the land of frequent revolution, is very fertile in the production of coffee, sugar, bananas, coconuts, and other fruit. Java can't produce better coffee. Sugar-cane grows as tall and as sound as a pine sapling. There are no vast plantations of bananas, but each and every adult raises several or more bunches for shipment. Bananas are raised in patches in the shadow of the mountains, in small clearings surrounded by almost impenetrable giant and gorgeous vegetation, around the little thatched roof dwellings and in wells and holes in the ground Ships, mostly from New Orleans, make regular trips for this popular fruit, and buy it delivered on the boat for 16 cents a bunch. Every bunch must average "eight hand," which, to be sure, is large enough and full grown. Oranges bear two crops a year. Limes, lemons, guavas, and kindred products grow with little or no attention.—*H. and C. Mail*, Nov. 26

THE CHINA TEA TRADE,

OLD AND NEW METHODS OF PREPARATION.

The exhortation of the Tsung-li Yamen and the Viceroy of the Liangkiang Provinces [see below] to Chinese tea planters is not calculated to produce any striking results. The exhortation has been issued at the instance of the Minister for the Netherlands, who says that no tea is superior to the Chinese tea in flavour and delicacy of taste and urges that the ancient methods of preparation should be continued instead of being changed for the more modern methods. The Minister would appear to speak in the interests of a limited class of connoisseurs, by whom the delicate flavour and aroma of superior Chinese tea is held in high appreciation, but the amount of leaf required to supply the demand in that quarter can never be large. The great bulk of the consumers prefer the Indian and Ceylon tea and if China wishes to regain her place as the leading exporter she will have to adopt the methods of her competitors. Even in Hongkong, where one would expect China tea to hold its own if anywhere, we find Indian and Ceylon tea largely imported to supply the requirements of the European community, which is a plain indication of the direction in which popular

taste tends. It may pay Chinese growers to produce a limited amount of high class fancy teas for the supply of special markets, but the trade in those descriptions can never attain any great magnitude. It is the taste of the average consumer that must be consulted if the China tea trade is ever to regain its former proportions.

The Viceroy LIU ascribes the loss of so large a proportion of the tea trade to the carelessness and dishonest practices of the Chinese planters, which have allowed foreign teas to capture the markets. There is no doubt a good deal in that, but it is far from being the whole truth. Indian and Ceylon teas are preferred to China tea even when the latter is of unimpeachable quality. Nor must the deterioration of quality be ascribed entirely to the inherent dishonesty of the planter. The unfortunate man, finding his prodnct labouring under a weight of taxation that prevented it competing on even terms with foreign tea, has been more or less driven to pinch the quality in order to retain a margin of profit. It is all very well for the Viceroy to exhort his people to " seek reform in the trade and mutually " aid each other in producing carefully prepared high " quality teas, and thereby create a new a wide " demand for the article, which will be followed by general prosperity to all," but if any success is to be achieved in that direction the Government must in the first place lighten the burden of taxation and so give the industry a fair chance.

Given lighter taxation, however, and the improvement in quality and the greater cheapness which might be expected to follow, a reform in the methods of cultivation and manufacture would still be necessary if China is to compete on equal terms for the supply of the general demand, for the small demand that exists for fancy teas will not be sufficient to keep up the volume of the trade. The Tsungli Yamen does not expressly condemn new methods, but urges that " whether their teas are prepared by the old methods or by the new " the inhabitants of the tea planting districts " should always keep in mind the importance of being careful in the work and aim at producing high quality teas in order to command the market." The Viceroy LIU also says he has on former occasions repeatedly exhorted the tea planters in his jurisdiction to introduce reforms into their methods of preparation, etc. What is intended by the Viceroy and the Yamen, however, is, apparently, that reform should proceed on the old lines rather than that an entire revolution in the trade should be effected ; for the quotation of the Netherlands Minister's despatch and the general tone of the exhortation seem intended to throw cold water on the attempt now being made at Foochow to introduce foreign methods. Yet it would seem that in the success of the Tea Improvement Company's experiment, coupled with reduced taxation lies the sole hope of a resuscitation of the China tea trade. If the Company has not at once succeeded in prodncing a class of tea to command the approval of the open market we hope it will not thereby be discouraged, bnt will preserve until success is achieved. —*Hongkong Weekly Press*, Dec. 2.

AN EXHORTATION TO CHINESE TEA PLANTERS:

THE DUTCH MINISTER TO THE RESCUE.

The following despatch, of which we (*N. C. Daily News*) give a translation, has been received by His Honour Ts'ai Taotai from H.E. Viceroy Liu, of the Liangkiang provinces :—

TO THE TAOTAI OF THE SOO-SUNG T'AI INTENDANCY, AT SHANGHAI.

I have to inform you that I am in receipt of a despatch dated the 12th day of the 9th moon (7th October) from Their Excellencies the Ministers of the Tsun li Yamên, embodying a despatch of the 24th day of the 8th moon (20th September) from H.E. Knobel, Minister-Resident of the Netherlands at Peking, to the said Yamen to the effect that H.E. had received a communication from the Tea Importers of Amsterdam, the contents of which ran as follows :—

" We regret to find that the samples of tea prepared by the new methods are not very good, but that the flavour of those made by the old methods is still vastly superior to the tea made in other countries. If therefore China tea be prepared after the new methods the leaf will be similar to that prepared elsewhere, while it will lose entirely the original delicacy of flavour peculiar to its place of production. Although the tea-planters of Java., Assam, and Ceylon expend much skill and labour on their products it must be confessed that they do not come up to the teas of China. As matters now stand people in Europe anxious to pnrchase high quality Chinese teas are unable to do so, and they are compelled to think that tea merchants in China are ignorant of the fact that the people of Europe and other places prefer to buy good Chinese teas to others. The tea made by the new methods in China is really a poor edition of the Indian tea, and therefore vastly inferior to that prepared by the old methods; whilst the prices demanded in England and the Netherlands for high quality [China] tea are three times greater than those asked for teas produced by the new methods. Moreover, tea prepared by the new methods is exported to foreign markets whilst British India tea are also exported to the same places for sale; and the two teas are compelled to compete for buyers. But then there are those [amongst tea consumers] who prefer to drink Chinese tea and yet others who like to drink British India tea. Upon a comparison of the respeotive merits of the two, however, it has been found that no tea is superior to the Chinese tea in flavour and delicacy of taste. Furthermore, the merchants of Russia, England, the Netherlands and other countries are of the same opinion and have requested the writers of this communication to inform the tea exporters of all China of the actual state of affairs as above explained."

" 'I, the Minister-Resident, have had the qnestion of the preparation of Chinese teas in my mind for a long time, and after many years' investigation have also arrived at a similar decision as that of the tea importers of Amsterdam and elsewhere, and I have also reason to believe that Your Excellencies will be pleased lo learn the opinions above presented.' "

* * * *

I would, therefore, earnestly exhort all my people to seek reform in the trade and mutually aid each other in producing carefully prepared high qnality teas, and thereby create anew a wide demand for the article, which will be followed by general prosperity to all. This despatch is to be distributed to the various local authorities of the tea districts, who are commanded to make the same known to all onr people. Let no one be guilty of disobeying my exhortations.

Liu, High Commissioner of Trade of the Nanyang and Victory of the Liangkiang Provinces.—*Ibid.*

THE AUTOMATIC GEM AND GOLD SEPARATOR SYNDICATE, LIMITED.

A CEYLON estate proprietor writes :—

" I see you are noticing 'The Ceylon Prospecting Syndicate' and in case you have not got it, under separate cover I send you a book on the Gem and Gold Separator. I saw it working at home, and I think it should do well out here. I had a letter from Mr. Goldie only last mail : he hopes to be out very shortly."

We quote from the circular descriptive of the Ceylon " plant " as follows :—

The plant shewn has been built for the Ceylon Prospecting Syndicate, Limited, 10 St. Swithin's Lane, E.C., and will be sent to their Mines near Rakwana, Ceylon. The mines consist of deposits of alluvial gravel, containing Sapphires, Rubies, Spinels, Cat's-eyes, Zircons, Topaz and alluvial Gold. The gravel is trucked or sluiced to the head of the plant at the rate of about 8 tons an hour, or say 60 tons a day of 8 hours. Such gravel may contain boulders, clay, sand, sticks, roots and the like, but all are

shot promiscuously into a large revolving Grizzley which arrests and throws out anything that will not pass between bars 1 inch apart. The clay is broken up and washed through the bars and this, with the gravel and fine sand, passes on to a puddling machine which reduces the clay and washes it and the sand out together.

The washed gravel is then elevated by means of a bucket elevator to a classifier, which screens it into eight sizes, ranging from ⅛-in. to ¾-in.; and each size is then fed by a band elevator into a special separator, which, by means of a current of water, automatically selects the gems and gold, their specific gravity being slightly higher than that of the worthless gravel, and discharges the latter into the tailings shoot, which conveys it away to the dump. The Gems and Gold are deposited in locked receptacles, from which they may be removed from time to time by an authorized person holding the keys. The main object to be accomplished is to perform all the above operations automatically, and without possibility of theft during the passage of the gravel through the plant, the difficulty of preventing theft of so small and valuable a product having hitherto been an insurmountable obstacle to the successful washing of gem-bearing gravels on a commercial scale. It will be noticed that the gravel cannot be seen, nor a handful of it in any way obtained, throughout the entire series of operations until the Gems are safely deposited under lock and key and the gravel finally discharged.

The weight of the plant is about 20 tons, and it is erected on a steel gantry, which requires only a few logs of rough timber as foundation. It is made in small parts for easy transport, and can be dismantled and re-erected when necessary, without skilled labour The cost without driving-powere is about £1,500, and the plant shown is being driven by a small 6 H.P engine. Water-power is applicable, if available, for driving and, with this advantage, that the tail-water from the motor may be used again in the washing plant. The machinery at Westbourne Park is working with only about 1,000 gallons of water, pumped round and round by a small auxiliary engine. In most cases a supply of water will be available from a local source, so that the return of the water in this way will seldom be necessary. As the plant is automatic and one man can take charge of several plants, the working expenses are extremely low.

The machinery shown is suitable for Diamonds, alluvial Gold and other minerals in coarse sizes. Plant to deal with crushings from rolls or stamp-batteries is built on the same principle with same necessary modifications, the Grizzley and puddling-machine being dispensed with. For the ores of lead, tin, zinc, copper, and the like, it has special advantages, and is particularly suitable for tender ores such as Cinnabar. —November 1897.

CEYLON AND CHINA TEAS.

Mr. Thos. Fairhnrst, the well-known merchant of Foochow, and Ceylon estate proprietor, who left by the homeward bound mail steamer "Valetta" has stated to a representative of your contemporary that when China teas were made in the European fashion the leaf did not seem to answer. It was neither China tea, nor Ceylon, nor Assam; and he did not think it was going to be a success. Experiments had not been made on a large scale, however, and Mr. Fairhurst said they were trying to enlarge the Foochow Tea Improvement Company, in order to see if they could not extend operations. He does not think that success is at all likely, because from his observations the leaf does not seem to answer made up in the Ceylon way. It produced a very good looking tea, but there was no flavour in it.

In his opinion it would be a long time yet before a new style of China tea is ready to compete with Ceylon.

He did not think China looked like resuscitating her tea trade to the danger of the Ceylon trade?

"Is not a good deal of your China, made tea green?' He was asked and he replied:—"Only about ten per cent, and they do not seem to care much for it in America, or anywhere else as far as I can see. I believe people here at one time feared competition with China, bnt now, my impression, after spending a fortnight in Ceylon, is that they do not think there is anything in it. The fact is that as the output of teas like those made in Ceylon goes on increasing ours must proportionately decrease." With regard to the Straits he said that it struck him Liberian coffee was going to be a big success in spite of the white ants and other tronbles. It was only a question of what price it would realise. It would grow well enough and it was only a question as to whether it would command a price to secure a big profit.

THE "ANNATTO" INDUSTRY AND OTHER MINOR PRODUCTS IN CEYLON.

The high prices paid for the seed of *Bixa Orellana* by one who is known to be the largest grower of the dye in the island, and the only exporter of the manufactured article, has attracted attention. Planters will now think, that after all, annatto is a paying product and that it was a great mistake to destroy the trees in some instances to make room for tea. The same might be said of croton oil seed which of late has been fetching high prices in the home market. Vanilla also comes under the same category; so do cardamoms. But let the cause of this sndden rise be carefully considered, before any one embarks in the re-cultivation of these products on an extensive scale. Two years back annatto seed was locally obtained at 10 cents a lb., and croton R6 per cwt.—not because there was no demand for them at that time, but rather because the output from different parts of the island was then much greater than it is now. The present prices will keep up as long as the present output is not exceeded and it must be borne in mind that the world's demand for these minor products is very limited.

TEA IN FORMOSA.

Tamsui, Nov. 20.

The tea season in Formosa has closed. The total production runs about 450,000 half-chests, which is about the same as last year. The duty question in America disturbed the market considerably and it is reported that there have been some heavy losses in consequence. Japanese as yet have made no serious attempt to enter the tea business either as planters, packers, or exporters, with the single exception of one company which packed some 12,000 half-chests and exported via Kelung and Japan some 800 half chests to America. The Japanese Government rendered great assistance in officially endorsing a movement made by the merchants to prevent the export of impure teas. It has been the custom of an occasional unscrupulous Chinese dealer to import inferior Amoy teas, mix them with Formosa's, and then export the product as pure Formosa oolong, also to add extraneous matter to Formosa. But the Government has now invested a committee consisting of three foreign merchants and four Chinese merchants with the authority to confiscate and burn all such teas found on the market, while the salesman of the same will be fined a sum double the amount he has named as the value of the teas. Several seizures of spurious teas were made during the season and it is quite reasonable to believe that there will be but few attempts made to dispose of false goods on this market during the coming season.—*China Overland Trade Report*, Dec. 2.

GOOD ADVICE.

Somebody gives the following good antithetical advice :—" Drink less, breathe more ; eat less, chew more ; ride less, walk more ; clothe less, bathe more ; worry less, work more ; waste less, give more ; write less, read more ; preach less, practise more."—*Indian Witness.*

COFFEE PLANTING IN BRITISH CENTRAL AFRICA.

The following are Messrs. Buchanan Brothers' estates in the Zomba District :—

Mlungusi Estate, about 70 acres, is the oldest plantation in the country, some of the coffee being 12 years old, and still bearing well.

Chirunga Estate, 120 acres, was opened in 1891 with 10 acres, additions being made every year. This year 50 acres have been added.

Namiwawa Estate, 100 acres, was begun in 1893 by planting about 20 acres, additions being made every year.

Likangala Estate, 60 acres, was opened in 1890. No additions have been made since 1892 to this estate.

Should the expectations of the Manager be realised, the crop for next year from the Zomba Plantations will be at least 40 tons of coffee.

Messrs. Sharrer have three plantations in this district, viz., at Zomba, Namitembo, and Likangala.

MLANJE DISTRICT.—The Nyasaland Coffee Co. have opened up 630 acres this year, all of which they hope to plant during the coming season. Carl Wiese opened up 100 acres last year, about 50 of which are planted. Further extensions are to be made during the coming year on this estate.

Mr. Richie of the Likulesi Estate informs us,—" We have now got about 220 acres under coffee, 60 of which has been planted out this year, and the seedlings look fairly well considering the long spell of dry weather they have had to fight against. We have now 160 acres four years old. When two years old it gave us 250 lb. ; last year 9 tons 16 cwts. ; and this year we expect to get 10 tons, picked off little more than 50 acres. These trees of course are still young, and taking everything into consideration I do not think we can grumble. The rainfall has been very insufficient indeed, there having been only a few showers after the end of January. We generally get a few days rain about the end of September and the beginning of October; this brings out the blossom right enough ; then we get six or eight weeks of scorching sun and by the time the rains are on us in December, the primaries are likely to be burned black. This has occurred here for two years in succession on coffee that has never given a crop. Irrigation has been tried, but was not a success owing probably to insufficient supply of water. Of insects, the *White* (or *mealy*) *Bug* is the greatest enemy we have in the plantation here : s it is most disastrous to the plants on which it may settle. *Red Spider* is vissible during the dry season, but is always exterminated by the rains. We have a quantity of *borer* amongst the oldest plants, but nothing to any extent. With reference to shade it is now well understood amongst planters that we must have shade for coffee, and I think that most of the planters on Mlanje are going in for shade. On one block of 100 acres we are planting fig cuttings and they are breaking well. They are planted 25 feet apart, with the view of course of thinning out if necessary. We are also raising a nursery of *Grevillea Robusta* which we intend planting out as a shade tree."

The Mount Zion Estate of Mr. Bradshaw is comprised of,—

50 acres	.. ..	7 years old,
50 acres	.. ..	6 years old,
100 acres	.. ..	4 years old,
50 acres	.. ..	3 years old,
50 acres	.. ..	1 year old,

a total of 300 acres, under shade one year old, *Albizzia* mostly. The coffee returns from the above has been so far very satisfactory.

The Bloomfield Estate owned by the same gentleman consists of 250 acres under cultivation and another 50 being opened. This estate is also under *Albizzia*, planted 24 feet apart.

Mr. A. C. Simpson, of the Ntundulima Estate, one of the oldest planters of Mlanje, does not think the coffee prospects of B.C.A. are of the brighest. He has tried cattle manuring and green manuring with no appreciable result. The fault is not to be found in the soil, as he says it has been proved to be suitable by analysis. Shade has not helped Mr. Simpson, as crops taken from coffee under bananas and other shade has not increased, but in fact, has decreased, as though the coffee trees look much better under shade, they do not bear such large crops.

The rainfall, he states, is the secret of non-success as the rain comes at the wrong time, heavier showers being required in September, October, and November.

Mr. Simpson states it is his opinion that for this reason coffee will never pay in B.C.A.

Mr. H. Cox of Ntundulima Estate intends putting the whole of his plantation under shade, using by preference native species of the fig (native names "*Tundu*" and "*Katchesi*") and the "*Kunda*" tree. He is of opinion that the crop of 1896 would have been much larger than it was had more of the estates in B.C.A. been under shade. The promise of the blossom was very good indeed, but the crop did not come up to expectations owing to the coffee trees being parched by the dry weather, being in many estates quite unprotected.

The use of shade will also enable the planter to fight more successfully against the ravages of the *borer*. Borer has not been so bad this year on Ntundulima owing to the fact that many infested trees were cut down last year.

Mr. ERIC AUSTEN of the Stewart Estate only commenced operations in March, 1896.

Mr. H. BROWN'S DUNRAVEN ESTATE has some 170 acres under cultivation, and this year he has opened something like 150 more. Mr. Brown believes in shade. His house has been roofed with shingles, the first to be used in this country, made from native woods.

Borer is fairly active, and entails a good deal of labour in cleansing the trees. The estate also suffered last year from the prolonged drought.

Mr. JOHN MOIR OF LAUDERDALE has also had a smaller crop than was promised by the blossoming, owing to drought. Borer is seen in parts of the plantation. On some of the new coffee plants there is white marking on the leaves. The larvae of a brown weevil was also found this year in some berries. *Black bug* was easily disposed of by washing with soapy water.

Albizzia muluccana seedlings planted for shade in February last year are over 4 feet high with a good spread. This appears to be a suitable tree for shade. *Grevillea robusta* and native fig cuttings are about the same height, but they do not appear to give such a good shade. Some coffee under bananas is doing very well but then coffee under shade, although the trees may be in splendid condition, is said not bear a large crop.

Mr. Moir has this year cut semicircular trenches a short distance from the coffee trees and filled them with manures. This has been done on the side looking north and next year a similar semicircle will be made and filled with manure on the south side, thus completing the circle round each coffee tree. Trees treated in this manner are said to develop very strong wood.

In between the coffee grass has been strewn on about 12 acres and left. This has been done with the idea of keeping the ground cool and moist. It is open to the objection that an accidental fire might destroy the coffee trees.

The hole on the Zomba plateau has recently been explored by Captain Brake and Mr. Gough of the B. C. A. Rifles. Having taken up with them a coil of stout rope Captain Brake was the first to descend, being lowered with a light to the bottom, Mr. Gough following afterwards. An immense pile of human skulls and bones was found at the

bottom, the hole having evidently been considerably made use of as a burial place. According to native accounts the last body buried there was about three years ago. The depth is about 60 feet.

The ivory which was reported to have been thrown down some years ago was not discovered, nor were there any relics whatever. A shot gun dropped down some time ago by Mr. MacDonald was recovered not very much the worse for its exposure.

The natives expressed great fear when the intention of exploring the hole was made known to them, but after Captain Brake had been drawn safely up again they recovered their spirits.

It is feared that the prolonged drought may cause some damage to coffee. This appears to have been the driest year on record, practically no rain having fallen in Zomba since the end of the last rainy season.

From reports received from the West Shire and Ruo Districts there is reason to believe that Rinderpest has made its appearance among the game in those districts.

Information has been received that game is dying in numbers in the Elephant Marsh. Prompt measures have been taken to endeavour to prevent its introduction into the Shire Highlands. In another column appear a few notes by Doctor Kerr-Cross as to the best method of preventing and treating the disease taken from reports and papers published in connection with the outbreak in South Africa.

The segregation of herds of cattle can be more easily carried out in this country than in the South and this is one of the greatest safeguards against the introduction of the disease.—*B. C. Africa Gazette*, Oct. 18.

THE AGRICULTURAL MOVEMENT IN ZANZIBAR.

Here is an example for the Ceylon Government in regard to backward districts. We quote from "The Shamba,"—a journal of agriculture for Zanzibar :—

A very successful Shauri was held at Weti on October 24th in connection with the work of the Agricultural Department of Zanzibar. Hamis bin Salm, the Li Wali had summoned the Arabs to meet Mr. Lister, Government Agent for Pemba, and Mr. Lyne, the Director of Agriculture, who were travelling through. The most significant feature of the meeting was the interest which some of the leading Arabs, notably Mohammed bin Jumah of Kish Kash and Mohammed bin Jumah of Mikindani, took in the matter. The Li Wali took the chair and in a brief speech explained the objects of the meeting and called upon the Arabs for their interest and support. Mohammed bin Jumah of Kish Kash followed with a very energetic address. The Arabs, he said, were too fond of sleeping and eating, and never bestirred themselves to any work, but the time had now come to make an end of all this. Mr. Lister next rose and said he had been among the people of Pemba now for eight months and during that time had made many friends both among Arabs and natives and he now appealed to that friendship for a fair and impartial hearing. He asked the Arabs to believe that what he had to say on behalf of the Government was sincerely said for their own welfare. In travelling through Pemba he had been struck by the fact that many people completely misunderstood the nature of their work. Most people seemed to think that because they were members of the Government that their only business was to help in taking their slaves away. He and Bwana Lyne had nothing whatever to do with this. Their business was with the land, the shambas, the cloves and chillies, coffee and cocoa, rubber and vanilla, all trees and plants; what to grow and how to grow them, how to prepare them for the market and so on. They all knew that cloves had been falling in price and that Arabs were not so well off as they were three or four years ago. The Zanzibar Government saw that if the people did not begin to grow something in addition to cloves they would get less and less money each year and probably in the end be all ruined. And so the Government wrote home to Europe for a man to come and try and find out what would be the most suitable plants for these islands to grow. That was what Bwana Lyne was now doing at Dunga. He had many sorts of trees at Dunga and all the work that he was doing there was for the assistance of Arabs and their shambas. But it was no use trying to help the Arabs unless the Arabs would help themselves. They must try and improve their shambas. Each shamba should have a nursery of young trees for planting out as the rainy seasons came round. Every shamba had a lot of waste ground upon it, and if each Arab had planted out say 100, 500 or 1,000 coconut trees, according to the size of their shambas, they would soon become valuable estates. As it was many of them were almost worthless on account of being neglected. It was a work not of one year but many years. Bwana Lyne would get now seeds and plants for them but they must ask for them, and if they got them he would come round and see that they looked after them properly. They should all buy a copy of the *Shamba Gazette* which was written especially for Arabs. They could buy it every month from the Hindi Hashim in Weti for one anna. The Arabs should write letters to the *Shamba* if they did not understand anything, and their letters would be printed and answered. Rev. J. Key in proposing a vote of thanks to the Li Wali for his trouble in collecting the people said he himself felt very strongly about these matters. The whole system of cultivation in Zanzibar could be improved upon. Many of the products such as cloves, copra and chillies reached the London Market in a disgraceful condition and in nearly every crop which the Zanzibar planters grew they were at the bottom of the market.

CEYLON PLANTERS IN THE STRAITS.—In the district report on Kuala Langat, in Selangor, for October, it is noted that applications for land for planting have been received from Messrs. Munro and Carey at Morib, and an application for permission to take up the whole of the island opposite Jugra, received from Mr. Carey on behalf of Mr. Wiggin, of Ceylon, is now being considered and dealt with by Government. The area of the island is said to be about 30,000 acres. In view of the increasing activity in the district, it is a matter for regret that the only means of ingress by land—viz., the road from Klang—is in a very bad condition. Since the advent of the rains, the road is little better than a quagmire.—*Straits Times*.

FIBRE-YIELDING PLANTS.—A writer in the latest *Indian Forester* just to hand condemns the fibre of *Calotropis gigantea* ("Wara" of the Sinhalese) as comparatively useless : his letter will be found on another page. We cannot understand this experience after what we were told about the value of this fibre. Mr. Macdonald's report should clear up the discrepancy.—We have had placed before us by a Ceylonese land-owner, an appreciable quantity of fibre—rather coarse but strong—which he obtained without much trouble from the stems of *Hibiscus esculentus*, the well-known plant yielding the "bandekai" vegetable of our dinner table, described as follows in our "Gardening in Ceylon" :—

BANDIKAY—*Hibiscus esculentus.*—The long capsules when young may be boiled and served like asparagus and are very delicate, or sliced and put into soups or curries. Seeds in good light oil, in drills 2 feet apart. This plant is easily grown and if it turns out that besides supplying a useful vegetable, it yields paying fibre, the cultivation might well prove profitable in the neighbourhood of our lowcountry towns. We are sending the fibre to London for report.

MINING AND GEMMING IN CEYLON.

APPROACHING VISIT OF AN EXPERIENCED MINING ENGINEER.

We said the other day in discussing Mr. Lockhart's Patent Gem Separator and the Plant now on the way to Ceylon, that we were on the eve of new and important developments of local Mining and Gemming Industry. We had, of course, partly in view, the approaching Geological Survey of the island which, we hope is not to be much further delayed and the important results which may be expected to flow from it, as well as from the success of the Patent Separators in our Gemming regions. We have now another "departure" to report. Our old friend (and one of the shrewdest Colonists that ever came to Ceylon) Mr. C. Tottenham in a letter just received, reports that he is sending out to Ceylon, by the Orient steamer "Oroya" a Mining Engineer of great experience in Capt. Leonard Tregay. The primary object is to inspect and report to Mr. Tottenham on some extensive plumbago deposits on his Monarakanda plantation, Gallagedera. But Capt. Tregay will be open to engagements elsewhere in the Colony after he has discharged the mission confided to him on Monarakanda. The very fact of his being selected by so experienced and competent a judge as Mr. Tottenham is enough testimony in our opinion to the merits of Capt. Tregay; but our readers may like to know what Mr. Tottenham has to say of him in writing to us:—"Captain Tregay although not a scientific geologist has a true miner's instinct, comes from a mining family, and has been mining in many parts of the world in gold, tin, copper, and iron chiefly—with all of which he is thoroughly acquainted. Capt. Tregay is almost the only mining man I have ever known—and I have known *many*—on whose thorough honesty, one can perfectly rely. Like other mortals he may be mistaken, but it will be an honest mistake anyway. I have known Capt. Tregay for a quarter of a century, and for much of that time he has been associated with me, in charge of mining properties I was sole or part owner of, and I have rarely found him mistaken. I have asked Captain Tregay to have a good look round while in Ceylon, and to let me know what he thinks of our mining prospects generally. I have asked him to have a good look at our quartz formation for gold amongst other things. A man like Captain Tregay would be *invaluable* in connection with the proposed Geological Survey, you have so strongly advocated, and which now I am glad to see is to be undertaken. Capt. Tregay when he has done my work, goes on to Western Australia on a visit and to report on mining property there I believe." We think the Colony is greatly indebted to Mr. Tottenham for sending so experienced a mining authority into our midst; and we feel sure that owners of land likely to have plumbago deposits, cannot do better than put themselves in communication with Capt. Tregay, in order that he may make an inspection after he has finished on Monarakanda. If any letter for our visitor should be sent to this office, it can be handed to him on arrival.

We are almost afraid to reopen the question of "gold" after the many abortive attempts in the past; but clearly no such practical and experienced expert as Capt. Tregay has ever come to Ceylon before this time, and it would be a great advantage that he should inspect some of the spots associated by the Sinhalese from time immemorial with the finding of gold—in Rangalla, Ramboda (Rangboda), Ruwanwella, &c.; and if he goes so far, Capt. Tregay should see the quartz near Badulla recently referred to by Mr. Haly of the Museum. In our ironstone, especially the "15 miles of ore" in Sabaragamuwa, referred to by Gygax, Capt. Tregay would be certain to take a special interest if only he can be brought to the "location." He is sure also to have a "look-in" at the Ratnapura and Matara gemming pits, and to take an interest in Mr. Lockhart's new "plant." As respects the Geological Survey, of course the Ceylon Government is committed to the officer —Mr. Oldham probably—who is to be sent to us from India; but we can fancy that Mr. Oldham himself would be delighted if he had the chance of having the assistance of a practical mining authority of long experience like Capt. Tregay, and this might lead eventually to an engagement for the latter in India, when his mission in Western Australia is completed. It certainly seems a little puzzling as to why paying gold reefs should not be found and opened among the quartz hills of Ceylon (and Travancore) as well as among those of Mysore and the Nilgiris? Capt. Tregay's opinion on this matter will be very valuable one way or the other.

PLANTING NOTES.

THE BENGAL UNITED TEA CO., LIMITED, is one of the latest of new Tea Companies and is to hold 5,245 acres of tea in Assam, Cachar and Darjeeling—the capital being £300,000. Altogether the properties cover nearly 20,000 acres. The capital issued is only equal to £40 an acre of tea, not counting the 14,000 acres in reserve!

PEPPER is grown at the Straits on a big scale when a single estate despatches as reported by the District Magistrate, Kuala Kangsar, as follows:—

The weight of pepper shipped to London from Chigar Galah estate was 97 pikuls 33 katis.

When shall we see estates in Kegalla district doing this?

THE SPRING VALLEY COFFEE COMPANY, LTD.—The Directors of this Company have decided in a circular, dated 9th November, "That no interim dividend will be paid at the present time, as the Board consider it advisable to adopt the same policy as last year, and let the dividend on the ordinary shares stand over until the annual accounts are presented to shareholders. The £15,000 preference capital recently issued was over-applied for and has been allotted, all works connected with the speedy development of the estate as a tea property are therefore being actively pushed forward. This year we are planting 186 acres of tea and 134 acres of fuel, and it is hoped that all the remaining area under coffee will be planted up next season. Plans for the additional factory accommodation for dealing with the increasing quantity of leaf have been approved by the Board, and this work will be put in hand at once. Latest reports from the estate with regard to tea are in every way satisfactory. The dividend on the preference shares will be paid half-yearly, viz.:—On 1st February and 1st August."

"RECORDS OF THE GEOLOGICAL SURVEY OF INDIA." Vol XXX, Part 4. 1897, has for contents:—On Nemalite from Afghanistan. By F. R. Mallet, late Superintendent, Geological Survey of India; On a Quartz-barytes rock occurring in the Salem district, Madras Presidency. By T. H. Holland, A.R.C.S., F.G.S., Geological Survey of India (with a sketch map); Note on a worn femur of *Hippopotamus irravadicus* Caut. and Falc. from the Lower Pliocena of Burma. By Fritz Noetling, Ph. D., F.G.S., Palæontologist, Geological Survey at Jaintia. (With Plates xix and xx.); On the Supposed coal of India, Buxa Duars. By H. H. Hayden, B.A., B.E., Officiating Deputy Superintendent, Geological Survey of India; Percursion Figures on Micus. By T. L. Walker M.A. Ph. D., Assistant Superintendent, Geological Survey of India; Geological Notes; Donations to the Museum; Additions to the Library.

THE CONSOLIDATED ESTATES COMPANY, LTD.—(Messrs. Arbuthnot, Latham & Co., Great St. Helens, General Managers) are to purchase the Horana Group of estates, comprising about 657 acres in the Kalutara district of Ceylon, of which about 426 acres are planted with tea, with tea factory and machinery complete. This group of estates is conveniently situated for the business of the Company, and the price at which the estates have been acquired is considered a very favourable one. The price paid for the estates is a little over £15,700, in addition to which some fields planted with tea adjoining the estates, with expenses of transfer, will probably bring the total cost to nearly £18,000. To cover this, the Company are to issue, £7000 in 5 per cent. Debentures at par, £7,000 in 8 per cent. Preferred shares at £1 per share premium, £7,000 in ordinary shares at par, and these issues are to be offered to the shareholders.

THE BENGAL GOVERNMENT CINCHONA PLANTATIONS.—The Government cinchona-plantations and quinine-factory in Bengal appear to be almost as profitable as those in Southern India. From the rather complicated accounts published in the annual report of these plantations for 1896-97 it is difficult to arrive at the exact profits on the year's working, but it is apparently half a lakh of rupees. The total factory output of sulphate of quinine was 14,124 lb. The Naduvatam factory made 7,891 lb. during the same period, so that Government manufactured in all just two tons of quinine last year. Most of this goes to meet a new demand that would not exist but for Government undertaking the distribution. In the Bengal report it is stated that cinchona-febrifuge is bought largely by the non-official public who are under no sort of compulsion to use it in preference to other febrifuges, but who do so because the find it such an efficient medicine. There is, for example, a single native medical practitioner in they Jessore district whose purchases of it last year exceeded the official consumption of the [whole province of Bengal.—Ibid.

RUBBER IN ZANZIBAR,—One hundred and fifty Para rubber trees have been taken from the Dunga nurseries and planted out at Tundauwa, Pemba. They have been placed 25 feet apart and cover a space of a little over 2 acres. Up to the time of writing, all, with the exception of seven, have taken hold and show every sign of growing rapidly. The locality is low sandy swampy ground though not actual swamp. The "Para" rubber tree appears to be especially fond of light and sun. It was found that trees grew much faster if the shade were removed as soon as signs of renewed vitality became apparent. The great thing is to keep the roots moist and well mulched with grass or leaves. The mystery of the Pemba rubber forests has at length been cleared up. No one was more ignorant of the locality and nature of the reported forests than the Pemba people themselves, particularly those who lived almost in the middle of it and all around it. Natives are loth to leave pathways, hence a black forbidding wood is to them a thing to be avoided, as it means sore feet.—*Shamba.*

RUBBER AT THE STRAITS—is going to be done on a large scale to judge by what the Acting District Magistrate, Matang, says in his monthly report;—

Mr. Stephens of Jebong estate has applied for some 3,000 acres of land for rubber planting in accordance with the terms of the circular that lately appeared on the subject.

New rules for land have just been promulgated by Sir F. Swettenham as follows:—

CULTIVATION OF GUTTA.—As it is the desire of the Government to encourage a comparatively new industry, it is hereby notified that land applied for the cultivation of gutta can, for the present, be granted on the following terms, which, however, will only be given to the first six successful applicants, after which they will be cancelled. (*a*) *Quit-rent.*—Ten cents an acre for ten years, afterwards fifty cents an acre. (*b*) *Cultivation.*—In concessions of 1,000 acres or less, at least one tenth of the land granted to be planted with gutta of any description, every year, no other form of cultivation being permitted so long as the land pays a quit-rent of ten cents per acre only. In concessions of over 1,000 acres and not exceeding 2,000 acres, one twentieth to be planted in each year. If over 2,000 acres and not exceeding 3,000 acres, then one thirtieth to be planted in each year. (*c*) *Duty.*—An *ad valorem* duty of 2½ per cent for fifteen years from date of commencing work. After that the duty in force for the time being; such duty not to exceed 5 per cent. (*d*) The above conditions to bind the lessee and his assigns, alienation of the land being unrestricted.—*1st December, 1897.*

THE POSITION OF VANILLA.—It is believed—says the New York *Drug Reporter*—that a syndicate is in control of the situation, so far as vanilla imports from Mexico go, and one view is that the reports from Mexico during the past three years of damage to the crops have been colored to serve the ends sought by the manipulators; but on the other hand, the shipment last April of 42 cases of the crop of 1894-95 is thought to confirm the reports of actual shortages in the crops. The action of the Mexicans has seriously curtailed the consumption of the Mexican bean. Dealers have ransacked the markets of the world for the other varieties. That they have been successful in securing supplies is attested by the importations. During the past two years about 40,000 pounds of Tahiti beans per annum have been received here, as against annual average of 15,000 in the preceding three years. Thus far in 1897 about 570 cases, or 57,000 pounds, of Bourbon beans have been imported. Only in rare instances have dealers succeeded in persuading their customers to continue to use none but the Mexican beans. Most of the users have mixed the cheaper varieties with a certain proportion of the Mexican beans, and in instances a small quantity of vanillin has been added to produce and extract of the flavor desired. The consumption of vanillin has increased enormously, the drop in the price from $5·50 per ounce to $1·70 (in fact to 90 cents before the new tariff became operative) having been coincident with the advance in the price of beans. While it is probably true that the artificial product does not produce that same rich flavor in the extract that the best Mexican bean does, a very large quantity of the cheaper extracts are used, and unless the price of Mexican beans is speedily reduced, it is very doubtful if there will be an outlet for the former average crop of 1,000 cases, even at the prices which existed before the upward movement commenced three years ago.

PROGRESS OF NORTH BORNEO AND THE PROSPECT OF TAXATION.

The recent action of the British North Borneo Government in notifying the increase of certain duties might have been anticipated by any one who knows the history of the Chartered Company. Established in 1881 by Sir Alfred Dent and some influential men like Sir Rutherford Alcock, whose death has so lately been communicated to us, the Chartered Company have seen their attempt prosper, and after sixteen years of paternal Government the territory can boast of a well established planting enterprise which is gradually increasing and comprises tobacco, coffee, gambier, pepper and other plantations in addition to the sago plantations which existed in 1881. Some of these have advanced to a paying stage, but no revenue is as yet collected except from tobacco which pays one cent a pound or in other words about one per cent of the value. We also have a well established timber trade with China, and the shipping engaged includes two steamers of 1,347 tons and 825 tons respectively which maintain a very valuable and constant communication with China whence a large proportion of our labour force is drawn. Time was when the Chartered Company paid a bonus on each trip to China and a large proportion of the ten thousand pounds sterling expended in the eighties on introducing Chinese immigrants had to be expended on chartering steamers to convey the immigrants; and even after the timber trade with China commenced the Government subsidised steamers and gave assisted passages from China by tickets issued here and in China. This paternal care extended to the trade with Singapore and it was only in 1891 that the subsidies to foreign steamers ceased. Since then the expansion of the trade with Singapore has enabled the shipping companies to hold their own, and today we are witness to the competition for this trade by the China Mutual Shipping Association which has lately commenced running two steamers from Singapore. But while watching the development of their territory, the Chartered Company have not benefited in any material way on the capital they have expended—a little over half a million sterling—except in 1889 and 1891 when dividends of 2½ per cent were paid, and in August of this year when the modest men of 1 per cent dividend on the paid-up capital was declared. On this last occasion the shareholders pointed out that the capital expended might fairly be viewed as a National Debt on which the Directors should try to pay a fixed rate of interest, as is done in all civilised countries. This suggestion naturally brings the Government face to face with its Revenue duties and the late increase imposed on the export of timber commended itself from several points of view. The duties formerly imposed were very low, and in the case of sawn timber were *nil*: moreover, when the first duty was placed on timber, exchange stood at a higher figure than it does today. Exchange is now so low that a profitable timber trade may be done with Europe, and the small increase in the export duty will probably not materially affect such a trade. Another point of view is that the timber exported was not grown by the timber companies, and it is only taken from the most easily accessible points along our coasts and rivers, and is therefore worked at the minimum of expense; and if the Chartered Company is ever to receive any return from this valuable asset it must be today, and before these points are denuded of their natural forest growth. It may fairly be expected that, as the desirable timbers are exhausted along the frontage, increased knowledge and more effective appliances will reduce the working cost. Up to the present it is an open fact that want of capital has not allowed our timber companies to do justice to the magnificent stores of timber so freely laid open to them, and from this point of view the opinion has been expressed that it would be better to prohibit small exporters from entering into the trade. From yet another point of view the present is not an unfavourable time for increasing the timber duties as the prices ruling are fairly favourable, and exports have consequently increased from Sandakan, while Kudat has lately added some 5,000 to 10,000 cubic feet per month. Looking to the future it may naturally be expected that the Chartered Company will expect established industries to pay for the benefits accruing from a well established government. The paternal sympathy with the growing interests of the Colony are today exhibited by a continuance of the old steamer-subsidising policy which has largely assisted the establishment of the local Sabah Steamship Company which maintains frequent coastal inter-port communication and is a dividend paying concern, profitable to those concerned in it; and last, though not least, by the erection of a telegraph wire across the territory and by the construction of a Metre Gauge railway now being constructed from the West Coast to the interior. All this cannot be done without money, and it seems but fair to expect a small return on the capital expended on the development of the Colony. The history of the past sixteen years is a record of patient-waiting and of hopeful anticipation that the Colony established by the Chartered Company would pay its way. This has become an accomplished fact and the next hope to be realized is that the Colony may pay a fair return on the capital expended. This also seems to be in a fair way of realization, not by imposing heavy Customs' duties but by so carefully levying duties as not to be a hardship or a deadweight on advancing trade. There are some articles on which a heavy duty, properly placed, would benefit trade. Our sago now sells for twenty-five per cent. less than Sarawak sago, a difference entirely owing to our allowing the natives to export it in a filthy, raw state; and the action of the Government in the future taxation of this product will probably lead to a much higher value and to large, local, sago cleaning companies which will be domiciled on our shores and add to our population. The Government has no intention of departing from its policy, hitherto maintained, of assisting trade and enterprise in every legitimate way; we offer our land at nominal prices, and we offer to give land for nothing under certain conditions; but at the same time it is to be expected that we shall ask for the return of a small percentage of the incomes extracted from the land and from the trade which the Government of the Chartered Company has been so successful in building up.—*British North Borneo Herald*, Dec. 1.

THE GUTTA-PERCHA CORPORATION, LIMITED.

(From the *Daily Chronicle*, Dec. 2.)

Capital £200,000, in 80,000 seven per cent. cumulative preference shares, 120,000 ordinary shares, both of £1 each, of which the whole of the preference

shares and 80,000 of the ordinary shares are now offered for public subscription. This company has been formed to trade in and manufacture gutta-percha, and to acquire and work a patent process "to obtain gutta-percha from the leaves and twigs of gutta-percha trees by an efficient an deconomical method." The prospectus goes on to show that there is room for a considerably increased supply of gutta-percha, which has advanced in price during the last few years, mainly owing to the wasteful method by which it is obtained—viz., by cutting down the trees. At the same time, to pay £150,000 for a patent which may possibly be very good, but which, so far as we can gather from the prospectus, has not yet been worked on a commercial scale, is, we think, too much, and it makes the company a very speculative venture. We think the patent should have been worked by a syndicate, and its merits fully ascertained, before being sold to a company at such a high price.

AUTOMATIC GEM AND GOLD-SEPARATOR.

Although sapphires, rubies, spinels, cat's-eyes and other precious stones command good prices and a ready market, it has hitherto been an impossibility for companies formed to promote this particular branch of mining to become really successful, owing, principally, to the fact that they were unable to prevent theft during the process of washing and picking the gems from the gravel. This obstacle has now been surmounted by Mr. William S. Lockhart, M. Inst. C.E., M. Inst. M.E.. the inventor of the Automatic Gem and Gold-Separator, and our representative had the pleasure of inspecting a complete plant, which has been specially manufactured for the Ceylon Prospecting Syndicate, Limited, the other day at the works of Messrs. Clayton, Howlett and Co., Woodfield Road, Westbourne Park, W. The mines where the Separator will be erected are situated near Rakwana, Ceylon, and consist of deposits of alluvial gravel, containing sapphires, rubies, spinels, cat's-eyes, zircons, topaz, and alluvial gold. In order to give our readers an idea as to how the plant performs its duty, we may say that the gravel can be trucked or sluiced to the head of the plant at the rate of about 8 tons an hour, or, say, 60 tons a day of eight hours. The gravel is shot promiscuously into a large revolving Grizzley, which arrests and throws out anything that will not pass between bars 1 in. apart. By this means the clay is broken up and passes with the gravel and fine sand on to a puddling machine, which reduces the clay, washing it and the sand out together. A bucket-elevator immediately carries the washed gravel to a classifier, which screens it into sizes, ranging from ⅛ in. to ⅝ in.; and each size is then conveyed by a band elevator into a special separator, which, by the aid of a current of water, automatically selects the gems and gold, their specific gravity being slightly higher than that of worthless gravel, and discharges the latter into the taillings shoot, which carries it away to the dump. The gems and gold are deposited in locked receptacles, from which they may be removed by an authorised person holding the keys. The above operations are automatically accomplished and it would be impossible for anyone to appropriate a particle of the valuable product during its transmission through the plant. The machinery is suitable for diamonds, and also deals successfully with alluvial and pyritic gold, free-milling, refractory and telluride ores. Some modifications, of cours are necessary to treat crushings from rolls o stamp-batteries; for instance, the Grizzley and puddling machine, mentioned previously, are dispensed with. The weight of the plant is stated to be about 20 tons, and it is erected on a steel gantry, possessing the advantage of being made in small parts, and therefore, can be easily transported. The machinery at Westbourne Park is driven by a small 6-h.-p. engine, and is working with only about 1,000 gallons of water, pumped round and round by a small auxiliary engine. The separator is especially applicable to Western Australia and other countries, where water is scarce, as the same supply can do duty over and over again. We may mention that Rakwana is one of the best gemming centres of the Ratnapura district of Ceylon, so that with the aid of the Automatic Gem and Gold-Separator, the Ceylon Prospecting Syndicate may look forward to a prosperous career and to the inauguration of a profitable industry,—*The Mining World and Engineering Record.*

CLUB ECHOES AND TEA LEAVES.

I do not know whether the idea may not have already been ventilated in Ceylon, but it occured to my mind the other day in glancing over one of the Reports of the United States Department of Agriculture to wonder if

CAMPHOR

had ever been tried as a bye-product in your island. From the report mention it appears to be a tree, which grows well under widely different conditions. It grows in Egypt, Madagascar, Buenos Ayres, the San Joachim Valey in California, the Canary Islands, and the South East of France as well as in its native Japan. In Tokio the trees are subject to a winter of from 70 to 80 nights of frost, but the conditions of really of successful cultivation seem chiefly a temperature never below 20 degrees F. in winter, plenty rain, in the growing season, and a nitrogenous soil. The camphor is distilled from the wood of the trunks, roots and larger branches, and the work is all done by hand. The wood is felled, cut into chips and placed in a tub something like a churn, size about 40 inches and narrower at the top than the base. A tight fitting cover is then put on. A bamboo tube from the tub connects with a condenser in which the oil is separated from the camphor crystals. Twelve hours is required for the distillation of a tubful. Twenty to forty pounds of chips go to each pound of crude camphor; and from Lewis and Peat's last fortnightly price list I see th Chinese camphor sells in London at 92s 6d a cwt. and Japan at 100s.

THE AMSTERDAM CINCHONA MARKET.

The 8,216 bales and 627 cases of Java cinchona-bark offered by auction at Amsterdam on December 9 weighed 753,859 kilos. According to analysis, they contain the equivalent of 40,793 kilos, of sulphate of quinine, or an average of 5·64 per cent. The tone of the market remains extremely firm. On Tuesday, December 7, 42 tons of cocoa-butter will be offered for sale at Amsterdam. These include 10 tons of "Hammer" brand (Dutch), 10 tons of "Helm" brand (Dutch), nearly 5 tons of "Holland" brand 9 tons of Suchard's (Swiss), and 7¾ tons of "Mignon' brand.—*Chemist and Druggist.*

PRODUCE AND PLANTING.

THE BULKING QUESTION.—The bulking question, like the problem of the poor, is always with us in some form or other. The latest point at issue has been whether the place of bulking should be mentioned in the catalogues. As will be seen from a report which appears elsewhere, the members of the Indian Tea Association are by no means unanimous on the matter, and suggest that, for the present at any rate, Indian tea producers should be allowed to follow their own sweet wills as to whether this information be given or not. As was pointed out in the discussion at the meeting, no valid reason has yet been put forward for giving the information on the catalogue, and if it is required, it can at all times be obtained at the warehouses. At the same time it may appear only reasonable to meet the views of the trade by stating the fact that the tea has been bulked in London when this has been done. It is certainly, however, strange that any dealer should prefer to have tea turned out of its original air-tight packages, thus absorbing the moisture in the London atmosphere, and losing not only its aroma but also its keeping qualities, merely to ascertain whether there was any country damage or not in the package. It looks as if the whole question has been raised in the interests of the warehouse-keeper to swell his profits, and to place a tax on the planter. It is a well-known fact that the cost of bulking on the factory does not amount to more than 2d, a package, while the warehouse charge for bulking an average, chest of tea is 1s. 5d. It will be seen, therefore, that the planter stands to lose 1s. 3d. a chest by this demand for bulking in London. On a garden producing 6,000 boxes of tea this would form an annual charge of £375 for doing in London what could be done far better on the garden.

NATAL TEA.—There is a steady development of tea cultivation in Natal, and this year's crop may reach a million pounds, which would constitute a record. Natal's tea trade with the Cape and the Transvaal is gradually increasing, and the local demand is larger. Messrs. Hullett and Sons have just erected in Durban large double-story warehouses and offices and are also opening out in London.—*H. & C. Mail*, Dec. 3

TEA IN AMERICA.

New York, Nov. 24.

At the last auction sale prices were off, and some lots sold at very low figures. Fancy Formosa brought 38c. This is strange in view of the better tone of the foreign markets, notably London. One of our foreign exchanges says:—"So far as the producer is concerned, the position and outlook of the tea market is favorable. Already the large distributing retail companies are showing some anxiety on the subject of supplies. Shipments from China have shrunk to small dimensions; the Indian crop is, so far less than last season, and there is only a small increase from Ceylon. Meanwhile consumption at home and abroad increases, and a steady depletion of stocks in the United States is taking place, the quantity in bond being 5,000,000 pounds less than it was a year ago. The tea trade of the United Kingdom, including re-exports, is now at the rate of 275,000,000 pounds per annum: the cocoa trade, which is rapidly increasing, is at the rate of 50,000,000 pounds weight."

The imports of tea, as reported by the United States Bureau of Statistics, for the nine months ended September 30, compare with the same time in 1896 as follows:—

Tea imported from—	Pounds.
United Kingdom	1,778,513
British North America	328,857
China	28,214,238
East Indies	782,236
Japan	19,776,294
Other Asia and Oceanica	49,237
Other countries	7,470
Total	50,937,445

[The figures affording comparison with 1896 are not given!—ED. *T.A.*]

NEW YORK, Nov. 23, 1885.

Editor American Grocer.

There is something inconsistent in the actions of the leading tea importers. They petitioned Congress to pass an act to exclude cheap and nasty teas, and said that if their suggestions were carried out, the standard of teas in the United States would be higher than in any other country.

Well, their suggestions have been the basis of the new tea ordinance, but we find they still demand the cheapest and coarsest teas. *Excluding dust, which does not come here*, the average price of pure, uncolored tea in London has been for the last few weeks about 9½d. (say 19c). Yet importers seem to fix a limit of 12 to 14c, laid down in New York—a price at which only the sweepings of the London market can be secured.

The margin between this importing price and the price to consumers is surely great enough to allow ample profit, even if importers raised their limits to a figure which would enable them to buy *average* teas. This rich country should be able to afford itself food products of average quality.

Apart from this aspect of the matter, there is the important fact that with an improved *quality* of tea, an equal *quantity* would make 50 per cent more cups of tea. Other Anglo-Saxon countries consume three to five times the quantity per head that we use here, simply because they import the good quality, leaving the rubbish to come to America.—Yours, etc.,

DISTRIBUTOR.

TEA CULTIVATION: FLAVOUR AND MANURES.

A very delicate as well as important question is suggested in the course of an interview by an *Observer* representative with Mr. A. Baur who has just started the Colombo Manure Works. We have great faith in the experience and shrewdness of Mr. John Hughes and should be inclined to take his advice on any point affecting our tea culture; but we submit that only practical experiment can decide as to the effect on the flavour and aroma of our teas, of certain specified manures. *Prima facie* there would certainly seem to be good reason to object to certain rather unsavoury fertilisers, not only for the objection specially mentioned, but in view of the risk of introducing disease; but, on the other side, we have the fact of a good many years of experience appertaining to not a few plantations in the use of some, at least, of the fertilizers repudiated; while again many of our old coffee-planters used to think that the introduction and too free use of artificial manures had somehow to do with the succumbing of their coffee bushes to fungus and green bug. There is nothing, therefore, like having the whole question looked into and the way in which individual planters can settle it for themselves, it seems to us, is by giving a perfectly equal trial to the different ingredients mentioned. One acre or a-half or a-fourth for each plot—so long as all the plots are fairly equal in soil, lay of land, age and treatment of trees—ought to suffice and if the different manures are applied at the same time, and some trouble taken to keep the results in crop, flavour and value of tea, separate, and to report fairly on the appearance of the trees,—a very valuable object lesson should be the result. Meantime, we have no doubt that Mr. Hughes' opinions and recommendations will receive very careful consideration from our planting readers, leading to enquiry and practical experiments.

PLANTING AND MANURING IN CEYLON.

Mr. A. Baur, who is well and favourably known in commercial circles, has on his return to the island, after a course of study at the Swiss Agricultural station of Zurich, and consultation with the best known agricultural chemists of France, and Mr. John Hughes, who has so extensive and intimate an experience of Ceylon soil, climate, and planting, devoted his business energies to the pushing of the sale of manure. His attention was naturally directed to the subjeet on account of his being a proprietary planter himself, and after perusing the correspondence, whieh had appeared in our columns, last year, on the manuring of tea estates he put himself in communication with a friend, who was a doetor of agricultural chemistry and who had originally gone out to Sumatra, under engagement to assist and advise planters of that colony. That expert advised him as to the qualities and defects of the manures in eommon use here, and this advice he followed up as we have already stated when he went home recently by securing the opinions of those who had given special care to the subject on the continent and in England, Mr. Hughes, in whose judgement must be placed the greatest value, expressing the opinion that no blood, raw bones and fish should be used as strong smelling substances taint the flavour often, and that unless first treated with acid, these materials were dangerous, there being a risk that they might introduce some fungus disease which should certainly be a warning to planters considering the havoc done by the coffee leaf disease.

Mr. Hughes was very particular as to the ingredients to be used and that their composition should be such as to suit the nature of the soil, crop and climatic conditions of low-country and up-country estates. There will however be this further advantage that his mixture can be made up in any proportion which planters with practical experience on the subject, may deem best suited to the requirements of their soil. Mr. Baur, who has made a special study of manures and of the principles of manuring will be very glad to give every possible information to planters and at nominal expense to secure analysis of their soils and obtain the best professional advice so that they may be induced to give the new method a trial which he feels confident will result in the adoption of more seientific manuring. Mr. Baur further assured us that his mixtures were made up on the most up-to-date scientific principles and that he was ready to guarantee the quality of the materials as being only first-class. He also pointed out the defects of the present system of manuring by which very often a good deal of the most expensive of the manurial constituents gets lost without taking any effect on the plants and claims that his mixtures will effeetually overcome this drawback and that they will therefore prove to be a more economieal manure.

With regard to his Works at Vauxhall Street, Mr. Baur mentioned that he was importing special machinery for grinding and mixing, as it was very important that the ingredients should be carefully mixed, so as to ensure each plant getting the proper percentage. As to the motor power he was going to have a 25 horse-power oil engine which is considered the most perfect type of its kind, one advantage being that the engine is guaranteed to require cleaning of its inner parts only onee every six-eight months. All the machinery is expected to be here by February, and we are sure from Mr. Baur's business enterprise that he will achieve a very fair measure of success indeed.

COLOMBO TEA SALES.

The results arrived at by Messrs. Forbes & Walker for the year 1897 as compared with 1896, differ a good deal from those given by Messrs. Somerville & Co. as may be seen from the following:—

(From Forbes & Walker's Circular.)

	Offered. packages.	lb.	Sold. packages.	lb.
1897*	426,298	=33,886,803	335,866	=26,512,099
1896*	402,219	=32,083,163	320,225	=25,412,624
Increase	24,079	= 1,803,640	15,641	= 1,099,475

(From Somerville & Co.'s Circular.)

	Offered. packages.	lb.	Sold. packages.	lb
1897*	425,582	= 33,788,217	322,755	= 25,630,499
1896*	403,295	= 32,005,564	318,770	= 25,403,345
Increase		1,782,653		227,154

80 lb. is said to be about the average of a package of Ceylon tea—ean the test be safely applied?

THE CHINA TEA TRADE.—"The Chamber of Commerce Journal" to hand by last mail contains a full report of a paper read by Mr. Geo. Jamieson, C.M.G. (H.B.M.'s Consul at Shanghai) on "The Effects of the Japanese War and Prospeets of British Trade," from which we quote the following:—

TEA TRADE

furnishes another and an even worse instance of how a great national industry is being ruined by the folly and indifference of the governing classes. It is only yesterday, as you are aware, since China supplied nine-tenths of the tea consumed in this country, and now I do not snppose she snpplies a tenth. It is asserted, and I do not doubt it, that if foreigners were allowed to introdnce machinery into the tea-growing districts and superintend the preparation of the leaf, China tea could even yet hold its own against the best that India and Ceylon can produce. But no such prospect, I am afraid, can be held ont. The treaty gives us the right to buy from the Chinese such tea as they prepare, but not to grow and prepare it ourselves. I was consulted, just before leaving Shanghai, by a small syndicate who were very desirons of getting machinery introduced into one of the large tea-growing districts as an experiment. The proposal was to co-operate with a native company, who would be the owners of the plan, and employ as snperintendents the necessary foreign staff. The plan seemed feasible enough, but it came to nothing. The native tea-men had not the conrage to risk their money. They did not know what the officials would say, or probably enough they got a hint that the officials would not have it, and so the whole thing fell through. I am, glad, however, to observe that something of the kind is being done at Foochow, where a supply of leaf can be procured near the port. A foreign company has got some tea-firing machinery into operation with, it is said, the approval of the officials, and I trust this may be the beginning of a new departnre. It is not particularly in the interests of China tea as against Indian that I say this, but in the interests of China trade in general. For unless the exports from China can be increased neither can her imports. *What* she exports does not matter, neither does it concern us what country it goes to.

* Total to 22nd Dec.

PAYMENT BY RESULTS.

It is impossible, in almost any walk of life, to do absolute justice to all classes, by any rule of universal application. We have all appreciated the obstacles which the old system of nomination to official appointments offered to justice. Had those with whom nomination rested been both clear-sighted in judgment and free from all taint of prejudice or partisanship, there would have been no need for change in the system; but men, however high-placed, being only human, the best candidates had often to give place to the most influential or the most showy. Competitive examinations were suggested as the best means of checking favouritism; but even on the assumption that perfect fairness obtains in the setting of papers and the awarding of marks, the candidate who obtains the highest number of marks may be far from being the ablest in intellectual power or deep reading. And even if he is the ablest, he may be deficient in character, or in aptitude for business, or in physical ability to do justice to his duties. The student is not always a practical man; and the cleverest student may prove a poor Administrator or be wanting in the Judicial instinct Competition is accepted as, perhaps, the best test that has been suggested though far from being perfect, or even safe in many cases. Then, in regulating promotion, after admission has once been obtained into a Service or Department, we are confronted by similar difficulties. Seniority is regarded as an old-world tradition; and when any other system is adopted it opens the door to favouritism and to the advancement of the more plausible or complacent. The very necessity for the Re-organization Scheme which has been adopted as applicable to the Civil Service, is connected with the difficulties we have been considering of doing justice to the individual on the one hand, and the community he serves on the other; and the drawbacks even of that Scheme are neither few nor imaginary, as we have seen.

The difficulties which beset officialdom are present with the private employer of labour, but certainly not to the same extent. The latter has fewer interests to consider, fewer critics to appease. He deals with what is, in a sense, his own; and not a trust for the community or the country. Though a conscientious man will reckon whatever he has as a trust to be administered with care and circumspection, he can disregard all criticism when he feels he has done what is right; but still, awkward questions may arise, and have arisen, in regard to one's duty to one's employees; and the present contests between capital and labour, are but the expression of the difficulties we have indicated. One of the fairest and most reasonable solutions of these difficulties is to be found in giving the employé a pecuniary interest in his master's business. There are obvious difficulties in the way of a general application of concessions. Who are the employés who are to be allowed this modified partnership? What is to be the extent of their share in the profits? If profits are to be shared, why not losses? These are details which offer difficulties; but none of them are insurmountable; and it is being very widely recognized now by far-seeing employers of labour that, both good work and loyalty are best purchased, by awarding to labour a share in the profits which it has the power to develop or lessen. In this view, we have always favourably regarded the action of local Plantation Proprietors who have offered their Superintendents something more than a living wage; who have provided for increments, at stated intervals, for good work: or better still, have held out the inducement of commission on profits, in order to create a closer feeling than is generally associated with payment for work. So far from considering the time inopportune for suggesting the division of dwindling profits from Tea, we are strongly of opinion that one of the most effective means of arresting the falling-off in profits, if not of materially increasing such profits, would be to offer the Manager or Superintendent a share in whatever is netted beyond the latest returns or beyond the average for two or three years. The interesting and instructive letters we re, ceived in response to our Tea Circulars, show how great and diverse are the responsibilities of a Superintendent, from day to day, and how widespread a feeling there is that all Superintendents do not attend to the manifold details of their duties as closely as they possibly might. What then is the best incentive to persistent effort, and to close attention to worrying details which one might with propriety leave to subordinates. Surely it is the offer of some benefit for extra trouble. It is impossible to bind people to hours in certain classes of work, just as it would be the height of unwisdom and cruelty to be guided by the law of supply and demand in regulating wages for duties which it is impossible to define. In keeping down advances, in exacting task work, in conciliating labour, in visits to the field and the factory, there is a vast difference between what can fairly be expected from a Superintendent, and what a careful, thrifty Proprietor will do for himself. The latter is the standard to be aimed at, and that can never be secured by rules and regulations, and any amount of supervision. Personal interest is required; and a share of the profits is the best inducement. For these reasons, we commend the action of Companies which encourage their Superintendents by an annual bonus; but we are inclined to think that the better course would be, after the example of the Advertiser in our columns for a Manager for Travancore, to offer Superintendents and Assistants a share in profits, or a commission, beforehand. We should then hear less of complaints like those which "Greatly Interested" suggests—complaints for which we would fain hope the occasions are few and far between.

THE CINCHONA CULTIVATION COMPANY *Pasir Nangka*, of Java, has declared a dividend for the last year's trading of 13 4-5ths per cent.

A NEW STEAM TURBINE.—Our (London *Times*) Rotterdam Correspondent informs us that two Amsterdam engineers, Mr. van Gink, managing director of the Cycle and Machine Factory de Hinde, and Mr. W. J. Holsboer, have invented a steam turbine which (according to a report in the *New Rotterdam Gazette*) will cause a revolution in steam engineering. The inventors have sold their system, it is said, to a German firm for one million marks, preserving for themselves the application of the system to gas and benzine motors; and have taken a patent for it in several countries.

THE CEYLON AND LONDON SHARE LISTS—IN 1896 AND 1897.

The following comparison is afforded by simply taking the local Share Association's list of yesterday's date and placing alongside the quotations in the similar list for 22nd December, 1896. The falling-off in the value of the shares of some of the local Tea Companies is very striking and shows how lack of confidence (due to lower prices, higher exchange and continued extension of cultivation) and scarcity of money have told on the financial standing of our local Tea Estate Companies. The last cause—scarcity of money—has also affected some of the more purely commercial or trading Companies; but these, as a rule, stand the comparison much better. So also, strange to say, do the London-Ceylon Sterling Tea Companies, and we are aware that, in their case, the quotations for the local market are not so good as those given in the London share lists. Several new Companies (some of them absorbing small Companies appearing in 1896) have to be noted, and also care must be taken to discriminate between Tea and other Plantation Companies. In one or two cases the value of the shares has been either reduced or increased (more capital called up) and this must be allowed for. Nevertheless the comparison afforded by the table cannot but prove instructive, not the least noteworthy fact being the readiness of so many holders of shares to "sell" at this year's quotations:—

CEYLON PRODUCE COMPANIES.

	Quotations Dec. 21, 1897.	Quotations. Dec. 22, 1896.
Agra Ouvah Estate Co., Ltd.	1050	1300
Castlereagh Tea Co., Ltd.	117·50	1[illegible]0
Ceylon Hills Estate Co., Ltd.	70 noml.	107·50
Ceylon Provincial Estates Co., Ltd.	5[illegible]0	690
Claremont Estate Co., Ltd.	50 noml	75—8[illegible]
Clunes Tea Co., Ltd.	115	170
Clyde Estate Co., Ltd.	105	120—125
Delgolla Estate Co., Ltd.	200	365 -370
Doomoo Tea Co., of Ceylon, Ltd.	100	117·50
Drayton Estate Co., Ltd.	160	170
Eadella Estate Co., Ltd.	2[illegible]0	560
Eila Tea Co., of Ceylon Ltd.	[illegible]0	155
Estates Co. of Uva, Ltd.	450	685
Glasgow Estates Co., Ltd.	1111	1400
Great Western Tea Co., of Ceylon, Ltd.	750	965
Hapugahalande Tea Estate Co., Ltd.	320	385
High Forests Estates Co., Ltd.	475	625—630
Do part paid	[illegible]50 noml.	[illegible]25
Hornkelly Estates Co., Ltd.	1[illegible]0	90
Kalutara Co., Ltd.	330	530—535
Kandyan Hills Co., Ltd.	60 noml	90
Kanapidawatte Co., Ltd.	90	—
Kelani Tea Garden Co.. Ltd	90	102·50
Kirklees Estates Co., Ltd.	170	180—185
Knavesmire Estates Co., Ltd.	80	115
Maha Uva Estates Co., Ltd.	785	1025
Mocha Tea Co., of Ceylon, Ltd.	900	1175
Nahavilla Estate Co., Ltd.	650 noml.	900
Nyassaland Coffee Co., Ltd.	90 ,,	100 nominal
Ottery Estate Co., Ltd.	125	130
Palmerston Tea Co., Ltd.	500	615
Penrhos Estates Co., Ltd.	90	105 - 107·50
Pine Hill Estate Co., Ltd.	[illegible]0*	110
Putupaula Tea Co., Ltd.	100 noml.	115
Ratwatte Cocoa Co., Ltd.	3[illegible]0 ,,	475
Rayigam Tea Co., Ltd.	70 ,,	102·50
Roeberry Tea Co., Ltd.	75 ,,	105—107·50
Ruanwella Tea Co.. Ltd.	60	110
St. Heliers Tea Co., Ltd.	800 noml.	1300
Stinsford Tea Co., of Ceylon, Ltd.	100	112·50
Talgaswela Tea Co., Ltd.	35	56
Do 7 per cent Prefs.	90 noml.	85—90
Tonacombe Estate Co., Ltd.	650	700
Udabage Estate Co., Ltd.	[illegible]5	105
Udugama Tea & Timber Co., Ltd.	25 noml.	30
Union Estate Co., Ltd.	360	540
Upper Maskeliya Estate Co., Ld.	700	830
Uvakellie Tea Co., of Ceylon, Ld.	85 noml.	120
Vogan Tea Co., Ltd.	77·50	110
Wanarajah Tea Co., Ltd.	1350	150—1525
Yataderia Tea Co., Ltd.	265	4025

CEYLON COMMERCIAL COMPANIES.

	Quotations. Dec. 21, 1897.	Quotations. Dec 22, 1896.
Adam's Peak Hotel Co., Ltd.	90	100
Bristol Hotel Co., Ltd.	95	100
Do 7 per cent Debs	101	100
Ceylon Gen. Steam Navgn. Co. Ltd.	105	85—90
Ceylon Spinning and Wvng. Co. Ltd.	15	40
Do. 7 o/o Debs.	90	100
Colombo Apothecaries Co. Ltd.	130	109
Colombo Assembly Rooms Co., Ltd.	12[illegible]0 noml.	12[illegible]0
Do. prefs.	17 noml	17 noml
Colombo Fort Land and Building Co., Ltd.	[illegible]0	95
Colombo Hotels Company	335	322·50—325
Galle Face Hotel Co. Ltd.	110	105
Kandy Hotels Co, Ltd.	85	90
Kandy Stations Hotel Co., Ltd.	— noml	7·50 noml
Mount Lavinia	[illegible]00	—
Do. part paid	1[illegible]0	—
New Colombo Ice Co. Ltd.	192·50	180
Nuwara Eliya Hotels Co., Ltd.	75	95—97·50
Public Hall Co., Ltd.	17·50	17·50
Wharf and Warehouse Co.. Ltd.	75	85

LONDON COMPANIES.

	Quotations. Dec. 21, 1897.	Quotations. Dec 22, 1896.
Alliance Tea Co. of Ceylon Ltd.	10⅜/8	13¾
Associated Co., of Ceylon Ltd.	8	9½
Do. 6 per cent prefs.	11—11¼	10½
Ceylon Tea Plantations Co., Ltd.	29½	29½—30
Ceylon Proprietary	1	—
Dimbula Valley	6¾	—
Eastern Produce and Estates Co. Ltd.	6¾	7
Ederapolla Tea Co., Ltd.	13	13½—14
Imperial Tea Estates Ltd.	8¾	10¾
Kelani Valley Tea Asscn. Ltd.	9½—10	12 - 12½
Kintyre Estates Co., Ltd.	10	10½—11
Lanka Plantation Co., Ltd.	7¼	7
Nahalma Estates Co., Ltd.	1	1¼
New Dimbula Co., Ltd. A.	28	26
Do B	25	25
Do C	15—20	15—20
Nuwara Eliya Tea Estate Co., Ltd.,	11½	13—13½
Ouvah Coffee Co. Ltd.	12⅜	12⅜
Ragalla Tea Estate Co. Ltd.	12½	—
Scottish Ceylon Tea Co. Ltd.	23—24	23·24
Spring Valley Tea Co. Ltd.	9	9 - 9¼
Standard Tea Co. Ltd.	14	15—15½
Yatiyantota Ceylon Tea Co., Ltd.	8	—
Yatiyantota pref 6 o/o	10½	—

* Shares reduced from R100 to R60 each.

COFFEE AND ANTS.—Here is a receipt for driving ants away from coffee beds. It is sent to the *Straits Times* from Kuala Lumpur:—Dig where the black ants are to be found, and sprinkle cold wood ashes as much as may be necessary. This will drive away the black ants, and will probably prevent the white ones from coming up. The ashes will not only drive black and white but even red ants, and can be used to keep these little parties away from almost every object dear to their tiny hearts.—*B. N. B. Herald*, Dec. 1.

FRENCH COLONIES: HOW A COFFEE INDUSTRY IS (NOT) STARTED.—Says the *Daily Chronicle*:—

A Paris contemporary tells an admirable story of French colonial administration. Some little time ago, 500 coffee plants were in store at the public garden of a French colony. The director conceived the happy idea of distributing these amongst the natives, and the suggestion was warmly approved by the Governor, who next day issued a proclamation to this effect:—

Art. I.—Any native requiring coffee plants must apply in writing to the authorities. Art. II.—This application must bear a penny stamp. Art. III.—The request must be countersigned by the head of the Second Department. Art. IV.—It must further be stamped by the head of the First Department Art. V.—The director of the gardens must keep a strict account of the plants delivered.

It is, perhaps, needless to say that coffee culture still languishes in that particular colony. In the Belgian Congo State private traders buy up the plants and give them to the negroes, making the advantageous stipulation that they shall receive half the produce. One hardly knows which method is the more to be commended.

THE VISIT OF THE MINING ENGINEER.

CAPT. TREGAY, M.E.—of whose mission to Ceylon we gave a full account, quite a week ago—passes a few days in Colombo before going upcountry. He will probably go to Kandy on Monday next and next day to Monerakande estate, and there, with the Manager, Mr. A. J. Thomas he will enter on the special undertaking which has brought him to Ceylon. He is meantime reading up local iterature bearing upon the Mineralogy of the island, our compilation "Gold, Gems and Pearls" being new to our visitor. We have mentioned the "gold campaign" entered on during the dark days of the Colony a decade ago, and how more than one mining expert then inspected some of our quartz reefs and directed how shafts should be driven, although they could not remain on the spot themselves to see the work completed. The most elaborate investigation was made by Mr. A. C. Dixon, B.SC., &c.; but though a scientific man, Mr. Dixon had had no experience as a prospector or mining engineer. In Ambagamuwa and Dolosbage districts chiefly were the reefs examined. Capt. Tregay considers that too little time was given to the quartz reef trials; for, he holds with all other authorities that where gold is found in the streams as in the Mahaoya and some others of our rivers, there ought to be gold-yielding quartz not far off. At the same time, we know that gold is the most widely and finely distributed of metals and poor old Robert Dawson's saying about gold in India and Ceylon—has clung to our memory since he first repeated it over thirty years ago—"Gold in Ceylon?"—he would say to the enquirer, —"why, of course, gold is found in the sands of every river here, just as in Southern India, where, when a man has nothing else to do, he goes and washes for gold and makes his two fanams a day—and it is on record that a man once made *four fanams (6d) a day*!" There is no doubt of gold existing in our hill formation; but whether it is in an accessible and paying form is the problem. Still, there are the profitable mines in Mysore and Coorg to encourage investigation; and here comes Mr. Domenico in a letter elsewhere, to tell us how he found very appreciable evidences of gold below the Morawak-korale District in the Southern Province. Proprietors with likely quartz on their estates in that District should write and engage Capt. Tregay to pay them a professional visit. Our visitor has had very great and varied experience in both Victoria and New South Wales, in California, South Africa, Siam, Chili as well as in Europe, and he comes to us with the highest possible recommendations. We trust wherever Capt. Tregay travels in the island he will meet with courteous attention and all possible information of which he may stand in need. Our native Plumbago Pits or Mines and Gemming Districts' operations ought to interest him very much; and our readers will learn of Capt. Tregay's impressions at the close of his inspection. Meantime, Capt. Tregay's address after Sunday next, will be care of A. J. Thomas, Esq., Monarakande, Madawallatenna.

CEYLON GAME PROTECTION SOCIETY.

We direct attention to the letter of Mr. Farr—who is ever in the front in such matters—giving cover to an interesting report of a meeting lately held in Haputale in connection with the establishment of a local branch of the Ceylon Game Protection Society. The Committee appointed is to act for Uva generally and is exceedingly well chosen as representative of the different districts in the principality. Very practical resolutions bearing on the subject were carried; and we trust Mr. Farr may be gratified by finding other divisions of the country establishing branches after the pattern just set in Uva.

THE AGRICULTURAL SCHOOL.

As an old believer in the Agricultural School and in its judicious well-trained Principal, Mr. Drieberg, we are delighted with the brave defence of the institution put forth in his Report reproduced on another page. It is monstrous that in this colony so purely agricultural, the one institution that should wither for want of proper encouragement and support is the Agricultural School. The Report very clearly shows where the institution is placed at a disadvantage as compared, with other not more deserving establishments for whose encouragement much more is done; and we sincerely trust that as the outcome of the present Commission, the Agricultural School in place of being allowed to lapse, may be established on a really liberal, sound basis and may prove the successful, progressive seminary which Ceylon should specially have in connection with its horticultural, agricultural and even planting interests. Several valuable suggestions were made by successive speakers and, the Mayor, who made a splendid Chairman, gave a most practical, enlivening as well as inspiring address—although he rose eventually to a point a little beyond the present generation. We must walk before we attempt to soar into the empyrean! Still, there is nothing like holding up a high ideal. With some of Mr. Davidson's illustrations of the backwardness of the community in its interest in Agricultural teaching we are rather puzzled. We do not know that we have ever seen the paper which he said provoked no criticism; but surely he cannot accuse the planters of the island or the city writers who fill the *Tropical Agriculturist* or Mr. Drieberg and his contributors who give us the excellent *Agricultural Magazine* with being at all backward in their interest in the main industries of the Colony. The rest of the world or "balance of creation" regard Ceylon (and its *T. A.*!) as the fountain-head of information on nearly every branch of Tropical Agriculture. We can only trust that Mr. Davidson and Mr. Obeysekara and Mr. Peris—if not on the Agricultural School commission already—will be individually asked for their advice and suggestions by the Commissioners, whoever they are, in reference to the School of the future. Meantime, it is refreshing to hear of Mr. Drieberg's headquarters being the centre of so much useful activity, and of the paying investments of Government that are represented there. May such activity, and success continue and expand largely through the influence which a well-adjusted, liberally-conceived Agricultural School is certain to exercise in the time to come.

THE GALAHA TEA COMPANY.

The shareholders of the Galaha Ceylon Tea Estates and Agency Company, Limited, held their first annual general meeting at the offices of the Company, 39, Lime street, London, on Tuesday, 7th December, Mr. C. E. Strachan, Chairman. After the notice convening the meeting had been read.

The Chairman, in moving the adoption of the Report and accounts, said—The accounts, duly certified by your Auditors, and the Report, have been in your hands for some days, and have, no doubt, been carefully read by all interested in the Company. I trust, therefore, you will allow me to take them as read. In moving their adoption it is only necessary for me to say a few words, as the Report deals fully with everything, and states the causes of the differences between the estimated and actual results of the season, and you will see that these are causes over which the Directors had no control. The crop turned out 829,000 lb. of tea and 19,240 lb. of cardamoms, against our estimate of 880,000 lb. tea and 20,500 lb. of cardamoms, or a shortage of about 5 per cent. This may be considered close and careful estimating when you bear in mind the large acreage, the different ages of the tea fields, and the different aspects and climates, which had to be considered. At one time there was every reason to expect a considerable excess on the estimate, but the last two months of the season were unpropitious, and very little crop was harvested. With regard to price, we based our estimate on the return of the two previous seasons, but, in the case of tea, there was an unexpected fall, and we only realized 6¼d. per lb. against the estimate of 7d.; while, in the case of cardamoms, there was a substantial rise, but the extra amount obtained for the cardamoms did not, of course, cover the difference in the price of the tea. Then we had exchange against us owing to the action of the Indian Government, and we also sustained a loss in rice, an advance in price being caused by the famine in India. As far as rice is concerned the crop reports from India are favourable, so there should be a decline in price soon, but about the course of exchange I can say nothing—high exchange is, of course, much against us, and I can only hope that the Indian Government will be unable to maintain its action. But, in spite of the circumstances I have detailed, the Company has done well, and it says a great deal of our properties, and business that, last season, with less than two-thirds of our tea in bearing, we are able to pay so good a dividend. With respect to our progress we have, as the Report tells you, added 200 acres to the acreage, opened 218 acres of new land, completed the Factory which is now able to deal with the crops for some years to come, provided new line accommodation for the larger force of coolies required, erected a hospital and doctor's bungalow, and, in fact, done nearly everything necessary to make the estates complete. All this expenditure has added materially to the value of the properties and to your security. We spent £1,418 in manuring, which amount was charged to current expenditure. Little or no benefit was derived from this last season, but it will be reaped in the future. This item alone represents nearly 3 per cent. on the ordinary share capital. I only mention this to let you know that the properties are being thoroughly well cultivated and cared for. During the present season we are opening 422 acres of very fine land, and we hope to have the tramway at work, and to complete all buildings in course of construction. The capital expenditure after this season will be small, as very nearly all this work is completed. The acreage in bearing and in partial bearing this season is 2,047 acres of tea, from which we expect 1,026,000 lb. I leave it to you to judge what we are likely to get when the whole 2,774 acres in tea are in full bearing, and I will only say that the larger quantity will, I believe, be produced at a smaller cost per lb. The Directors have not lost sight of the necessity of creating a reserve fund, but at present we are developing the properties, this being considered the best reserve that can be made, forming as it does a solid basis for future profits. With all the buildings completed and fully equipped, and with so large an acreage of the best land to come into bearing, the prospects in my opinion are decidedly cheerful, as the whole business is a sound working concern.

Mr. Jonas, a shareholder, said that in one sense the declaration of the final dividend of only two per cent. on the ordinary shares was disappointing, after an interm dividend of five per cent. as it could hardly be expected that such a large proportion would be declared for an interm payment. The Chairman explained that at the time it was considered by the Board to be fully justified, and that there was every reason to anticipate the payment of ten per cent. for the year, but, owing to the unforeseen circumstances already mentioned, the estimate had not been obtained.

Mr. Low enquired if any allowance were made for depreciation, and what steps had been taken to maintain a fuel reserve.

In reply, the Chairman stated that nothing had been written off this year for depreciation, most of the machinery being new, but that in future this important matter would be borne in mind; as to fuel reserve there was a large acreage in timber in addition to the belts of timber on the estate.

The Chairman's motion to adopt the Report was seconded by Mr. Harwood, and unanimously carried.

The Chairman also proposed the payment of a final dividend of two per cent. in respect of the 5,000 ordinary shares, and this being seconded by Mr. Evans, was agreed to, making a return of seven per cent. for the year.

On the proposal of Mr. Low, seconded by Mr. Dunphie, Messrs. Fuller and Wise were duly elected Auditors.

The proceedings closed with a vote of thanks to the Chairman.

Madagascar under the French.—From a commercial point of views this seeem to have already proved a very unfortunate matter for trade. The "Tariff Général" has been introduced and the result is (says the correspondent of the *British Trade Journal*) that the whole trade of Tamatave is turned topsyturvey. Here are two instances of the troubles that have arisen :—

Ten cases of tea arrive from Ceylon, each of which contains 150¼-lb. packets of tea packed in tin-foil. The Custom-house authorities exact that every packet be opened, the tea poured out in bulk, and the tinfoil weighed apart, as it pays a duty of 13*s.* per 100 lb., while the tea pays 2*l.* per 100 lb. Result: the tea is virtually ruined. *Morton's goods*, of which there is an enormous consumption in Madagascar, have to pay 35 per cent. on invoice price. The other day a merchant presented his *declaration* as per invoice of three cases "mixed pickles." Every case has to be opened, and amongst these mixed pickles were found several bottles of *piccalilli*. The underlings immediately drew up "a court of accusation," and condemned him to pay a fine of 35*l.*, because *piccalilli* contains curry powder, which pays 35 per cent., although the saffron root from which it is ground pays nothing.

THE CACAO FUNGUS SPECIALIST.

Mr. Carruthers is very busy with his investigation and hopes to be able to throw light on the origin and cause of the cacao plant disease, by-and-bye; but obviously the investigation is not one to be hurried, and will require time to deal with it. An upcountry correspondent (not a cacao planter) writes :—

I had the pleasure of travelling with the cacao expert sent to Ceylon by cacao planters for the purpose of investigating into the cause of death amongst the cacao trees.

That the canker is there, and the deaths in some of the fields are very numerous are facts beyond dispute. The cacao planters have an able and energetic Specialist amongst them in Mr. Carruthers and it is a fortunate circumstance, for he has a hard task before him, ere he can confidently say, "Here gentlemen is the cause of the disease and death, but prevention is better than cure and this is what you must do." Is the cacao enterprise of so little importance in Ceylon, that the Government should not be asked to contribute towards the cost of this investigation? I think Mr. Editor you will agree that His Excellency ought to come forward without being asked, and at least hold out some prospect of reward, and afford every facility for a thorough examination into the cause of so many deaths amongst the cacao trees of Ceylon. We have the man; let Government now provide the means.

"Hear, hear" we emphatically add; or at least, 'let the Government supplement the means."

SALT FOR AGRICULTURAL PURPOSES.

"In the name of the Prophet——SALT!" After all, the Government wound up the somewhat controversial if not stormy sitting of the Legislature, with a very acceptable concession to public opinion as represented by the Tamil Member. A Committee to enquire into the denaturalising of Salt so as to be available duty-free for agricultural purposes was granted to Mr. Coomaraswamy, and the Colonial Secretary went further in showing his personal interest in the subject in a very satisfactory little speech. The area of "inland estates" likely to use salt has considerably increased since 1888, and we do not see why the demand for denaturalised salt should be confined to palm cultivation. So that the question may arise in an urgent form as to how the 150,000 (rising rapidly, perhaps, to 250,000) cwt. of salt required for local agriculture, are to be provided. Better means of manufacture and transport will be indispensable and a further reason will thus be adduced for the Railway to Puttalam. Meantime we congratulate the Hon. P. Coomaraswamy for bringing this long-standing request so far to a practical issue and we heartily trust that the labours of his Committee will be crowned with success (we had almost written with *salt*!) and then he will certainly deserve well of his countrymen even if the operation of the "five years' rule" bring his present term of service as Legislator to an early close.

The report of the discussion is as follows :—

The Hon. the TAMIL MEMBER moved :—That a Select Committee of this Council consisting of the Hon. the Auditor-General, the Hon. the Treasurer, the Hon. the Principal Collector of Customs, the Hon. A. De A. Seneviratne, the Hon. W. W. Mitchell, the Hon. J. N. Campbell, and the mover be appointed to consider and report upon the feasibility of selling salt at cheap rates for agricultural purposes.

He said :—It is not my intention, sir, to say more than a few words in support of this motion It is admitted on all sides that salt is beneficial to agriculture and especially coconut plants. It is largely used in other parts of the world, but in Ceylon because it is a Government monopoly and sold at prohibitive rates, the planters find difficulty, in using it as a manure. The Government makes a very good thing out of it, sir. I find that the revenue from this monopoly is certainly a million rupees a year. According to the Blue Books the cost of production is 32 cents per cwt. and it is sold at R2·40 per cwt. The profit therefore is R2·8 per cwt. and there are about 400,000 cwts. produced annually. Any amount of salt can be produced and the more it is produced the less it costs. Therefore I think the Government should find no difficulty in supplying planters with salt as manure. There is certainly one difficulty. The Government will naturally argue, if we supply salt at cheap rates as manure, how are we to prevent it being used for other purposes. Now, sir, this is a question that was solved elsewhere 30 years ago while we had gone to sleep over it. In January, when I went to Europe, I had the opportunity of meeting a German gentleman. One of the subjects we discussed was the Salt Monopoly here, and he told me that the King of Prussia, as far back as 1867, passed a law whereby the mode of denaturalising salt was fully laid out, and salt was sold cheaply, not only for manuring, but for another purpose—fish-curing—about which the Government had been very anxious, but which they had not been able to carry out before, owing to the difficulty to which I have referred. On my return I mentioned the circumstance to Mr. John Ferguson of the *Ceylon Observer*, whom we all know; and he has published a pamphlet giving full information on the subject and containing a translation of the German law which any member can read for himself, and see that it is most simple. Competent authorities in Ceylon declare that what has been carried out successfully for the last 30 years in Germany can with equal success be carried out here. I am sure that Your Excellency's Government will be only too glad to help the planters and it is because I believe that, that I ask that a Committee be appointed to go into the matter fully and report on the subject.

The Hon. the MERCANTILE MEMBER seconded. He said :—This subject has been brought before this Council in years gone by, but the difficulty hitherto has been in finding some method of denaturalising salt. This, as has been pointed out by the hon. mover, has been discovered by a German, and in the pamphlet to which he has referred, full details are given. I have reason to believe that one of the great needs for the cultivation of the coconut in inland districts is a good supply of salt, and, if Government can see their way to adopt the method suggested as an experiment, I think the result will be to afford encouragement to continue. I do not think the revenue will suffer in the least degree. I hope we shall not be told that the stocks of salt are so small that there will be difficulty because that is a difficulty that can be easily got over.

The Hon. the TAMIL MEMBER :—I would add to the Committee the name of the hon. the Government Agent, W.P.

H.E. the LIEUT.-GOVERNOR :—There is no objection whatever on the part of Government to the passing of this resolution, and in proof of that I may state that the subject has been under the consideration of the Government at different times during the last 40 years, and the last

occasion was in May 1889, when a communication was made to a European gentleman, who, I think, has taken up native industries. In that communication he was told that the Government would be quite prepared to consider any proposal which might be made on the part of the agricultural community. I, too, had the advantage of meeting the German professor to whom the hon. member has alluded and he assured me that the system of denaturalisation could be effectively and readily carried out. I was very much assured by what he said and I am very glad that the hon. member has brought the subject to the notice of Government in his motion today. It is now 30 years since the discovery was made but we need not go to Germany for information. Dr. Letheby in 1869 said there was "no substance which can be easily, cheaply and safely used for adulteration. Proper use is only secured by actual ocular supervision." I understand from the German professor that in the progress of science something has now been discovered which is effective and practical. I understand sir, that this is not such a large question as one would suppose at first: In 1888, the last time but one when enquiry was made there were only about 100,000 acres of inland coconut plantations, and the information given to me by coconut planters was that the amount of salt that they would undertake to purchase was 125,000 cwts. for the whole island. I may mention sir, that we have not at present such a very large stock of salt; owing to the season the stocks at some of the stations are very low. I am very glad that the hon. member has included the Auditor-General on the Committee because he is Controller of the revenue and has always been our authority on the salt revenue. As I have already stated there is no objection on the part of Government to help this Enquiry and I hope it will have a successful issue.

The resolution was unanimously adopted.

PLANTING NOTES.

EXPERIMENTAL FARMING IN MADRAS.—The question of the establishment of experimental farms and farm school is still under the consideration of the Government of Madras, and it is not probable that, if any scheme is ultimately settled, effect can be given to it before the end of next year. The provision of R20,000 made by the Board of Revenue in its Budget estimate for 1898-99 on this account has accordingly been struck out.—*Madras Mail.*

VANILLA AS A CEYLON PRODUCT.—Vanilla, which has hitherto been conspicuous by its absence in the products cultivated in the Island, will soon be included in that category, providing the climate and soil prove favourable. Herr Langa, a young German who came out some time ago to learn tea planting under Mr. Holloway of Franklands, Wattegama, has purchased an estate of nearly a hundred acres, on which he intends cultivating vanilla, and should he be successful, he will find little difficulty in securing for it a speedy sale in the market for Ceylon products. Vanilla by reason of the agreeable flavour which it imparts to tea and other beverages, is in great demand, though at a premium, and on this account the profits accruing from its cultivation will in time be considerable. Now that the projects has been fairly launched on the somewhat treacherous waters of experiment, it deserves encouragement, and Herr Langa ought to receive hearty co-operation in his endeavour to promote a new industry.—Local "Examiner."

SALE OF ESTATE PROPERTY IN CEYLON DURING 1897.

We direct attention to the long and interesting list of Sale of Estates in Ceylon during 1897 given on another page. Our mercantile and planting readers cannot fail to scan this detailed series of sales with special attention, and we trust they will give us credit for some little enterprise in presenting the list to them at this early date. There has been little or no abatement during the year now drawing to a close in the formation of limited Companies to take over Ceylon properties, and several of the sales are of groups of estates in different districts associated for the very purpose of starting a Limited Company. This continued activity in the selling and buying market is the more striking when we consider the discouragement offered by lower prices for tea and higher rates of exchange generally prevalent in 1897. Taking the totals realized by the Sales of Estates in our lists as compared with 1896 we have the following:—

	Total Value of Plantations sold:		
1896 ..	R5,790,768	..	£1,668,912
1897 ..	3,382,311	..	£1,517,702
Decrease this year	R2,408,457	Decrease ..	£ 151,210

CEYLON TEA COMPANIES.

A REVIEW.

We have on several occasions alluded in this column to the steady progress and splendid financial position of Ceylon, which, needless to say, has been brought about solely by the tea planting enterprise. When wonder is expressed that other tropical countries do not enter into the lists of competition against Ceylon by growing tea, the fact appears forgotten that no other country could suddenly open up its land into tea estates as Ceylon planters were able to do within a few years.

The coffee-growing industry had been going on in the island for upwards of forty years before the first break of Ceylon tea was ever shipped to England. During all these forty years jungle had been felled, roads and drains traced and made, and Tamil coolie labour imported, or, indeed, had been raised upon the estates themselves. When, therefore, owing to the ravages of leaf disease and the fall in prices, coffee began to show a recurrent loss to planters who had been long accustomed to a high percentage of profit, the entire island was equipped with nearly all the requirements of a tea-growing country.

In thousands of instances tea plants were put in between the lines of the rapidly-failing coffee trees, so that the weeding which was required for the one product was equally advantageous to the other. The young tea plants also benefited from the shelter and shade furnished by the coffee trees. In hundreds of other instances the coffee trees were bodily removed from whole hill-sides, and either carted away or burnt in the ravines when the denuded portion of the estate was relined, holed, and planted up with tea seedlings, all within the space of two or three months.

Under such circumstances the cost and efficiency of the planting up of 200 acres with tea were such as to defy any competition, while the fact, that Ceylon was equipped with an army of 600,000 Tamil labourers all conversant with the routine and discipline of an estate enabled the new enterprise to be carried on without a hitch. The change of the face of the planting districts was comparable to nothing but a dissolving view. As the coffee trees faded away the tea plants came into focus, until the same dark green aspect was visible over all the hills of the upcountry districts.

GENERAL CEYLON TEA ESTATES.

The history of the tea enterprise of Ceylon has been one continued success, and, although the price of tea may fall, there are no grounds for anticipating any alteration in the good profits now being made by well-opened estates. The company whose prospectus is before us has been formed for the purchase of some twenty-two different properties in various well-known planting districts, and including upwards of 4,000 acres of tea in full bearing, 1,622 acres of young tea, and 3,600 acres of reserve land.

It may therefore be literally said that the company has its capital scattered over a thousand hills, and from the figures and estimates given there is room for a considerable increase in the profits as uniformity of management curtails working expenditure and young tea comes into full-bearing, which it does usually at the end of the sixth year. The estimates contained in the prospectus are based upon the experience of the past ten years by experts who are seldom greatly at fault, and the total amount available for dividend shows that a rate of 10 per cent. may be reasonably expected. A good feature about the company is that the land to be acquired ranges in elevation from what may almost be termed the low country, such as the district of Kalutara, to the elevation of 3,500ft. or 4,000ft. or over in the higher portions of Pussellawa.

With low country teas the planters get quantity, provided the rainfall be sufficient to induce a constant "flush," while for the tea grown in the upper districts they expect a smaller yield per acre, but a considerably higher price in the market. Apart from the share capital the five per cent. Mortgage Debentures should be a good purchase for any investor desirous of having a stake in the tea-growing enterprise and who prefers a fixed rate of interest with specified security for his money.—London *Echo*, December 2.

SALT AND COCONUTS.

We direct special attention to the letter of Mr. Cochran, Chemical Analyst, on this subject. Mr. Cochran seems to prove that it is quite needful to supply salt to the maritime, as well as to the inland, growing coco-palms. The former no doubt benefit by the saline breezes; but at the same time, they make great demands on the soil. Inland trees having no salt-bearing breezes to feed them, make still greater demands on the soil. Altogether, it is evident that our coconut-palm cultivation ought to greatly improve from the liberal application of denaturalised salt. Let us suppose that the result from 200,000 acres being so treated, was an increase of even so few as five nuts per tree per annum, and we should get an addition of between R1,400,000 and R2,100,000 to the annual income of the island. No mean improvement this! The fact is that neither the Government nor the public of Ceylon have ever awakened to a proper sense of the importance and capabilities of the great Coconut Planting Enterprise of the Colony.

THE GALAHA COY.

Considering the difficulties experienced during the past year through high exchange, lower prices for tea and dear rice, we think this new Company has done exceedingly well in paying a total dividend equal to 7 per cent per annum. This has been secured too without neglecting to do the fullest justice to the interests of the shareholders in cultivation, factory and transport improvements. Then the Company has no less than 700 acres of young tea, so that it occupies an exceptionally strong position. The report of the Chairman's (Mr. Strachan's) address and of the other proceedings appears on page 493, and we now give the main portion of the Directors' Report :—

The Directors have pleasure in submitting their Report, also Statement of Accounts duly audited for the year ending 30th June last.

		£ s. d.
The gross profit for the season is ..		10,580 15 11
From this has to be deducted—		
Interest on £55,000 Debentures	£2,750	
Dividend on £60,000 Preference Shares at six per cent ..	3,390	
And the Interim Dividend of five per cent on £50,000 Ordinary Shares paid in January	2,500	
	——	8,640 0 0
		1,940 15 11
London Charges, including Directors' Fees, Trustees' Fees, Income Tax, &c.		771 15 5
Leaving a balance of ..		£1,169 0 6
From which the Directors' recommend the payment of a—		
Final Dividend of two per cent. on £50,000 Ordinary Shares, making seven per cent. for the year ..		1,000 0 0
Balance to carry forward ..		£169 0 6

The outturn of the Tea Crop was 829,000 lb., being 5 per cent below the estimate, and the Cardamom Crop was 19,240 lb., being 6 per cent below the estimate. These shortages arose from unfavourable weather during the last two months of the season. The Tea sold at 6·23d per pound nett, or about ⅜d per pound below, but the Cardamoms realized 10d per pound above the estimate. The unforeseen advance in exchange was an element of loss not calculated upon, as was also the high price of rice, caused by the scarcity in India.

The above causes account for the difference between the estimated and actual result of the season's working, but, considering these adverse circumstances, the Directors cannot but feel satisfied with the result.

During the past year 200 acres of additional land adjoining the Company's estates were acquired, 218 acres were opened for tea, and the expenditure of the season included the sum of £1,418 for manuring, the benefit of which will be felt later on. The factory was extended in a substantial manner in order to deal with the increasing crops, and new lines were built to accommodate the larger labour force necessary for the efficient working of the estates. The capital expenditure has materially raised the value of the Company's properties.

The acreages under cultivation, including 422 acres which are being opened for Tea and Cardamoms this present season, are :—

	acres.	acres
Tea in full and partial bearing ..	2047	
" non-bearing	727	
	——	2774
Cardamoms in full and partial bearing	93	
" non-bearing	14	
	——	107
Timber		276
Total cultivated acreage ..		3157
And in addition to this are 1917 acres of Forests, etc., etc.		1917
Making a total of	acres	5074

The Tea crop for the current season is estimated by the Ceylon Manager at 1,026,000 lb. against 880,000 lb. for the last season, and the Cardamoms at 27,750 lb. against 20,500 lb. for last season.

The Directors are glad to say that the market has improved, and the sales of present season's Teas to date show an average of 6⅝d. net per lb. They

take this opportunity of expressing their satisfaction with the work done by the Manager and staff in Ceylon.

CACAO IN CEYLON AND TRINIDAD.

The following paragraph from the London letter of our morning contemporary, is of so startling a character that we reproduce it in full :—

"The following extract from a letter penned by a writer well versed in cacao planting may be found worthy of the consideration of the Cryptogamist who is now called on to prescribe a remedy for the disease under which the trees are suffering:—'What I believe to be the matter with cacao is limit of age, which limit is reached at 13 or 14 years. At any rate cacao dies out, I may say, universally, when it reaches that age. Supplies grow vigorously where the original cacao has died out, so it comes to this, that on a cacao estate you have a certain proportion of acres bearing, a certain proportion dying out, and a certain proportion coming on towards bearing, *i.e.*, if you re-plant as the trees die out, as you should do. When the cacao is sickening before dying it is no doubt attacked by various pests which do not attack it while it is vigorous and healthy. I do not think these pests are the *cause* of the death of the cacao, although they may hasten it.' If this be a correct view, the practical benefit to be anticipated from Mr. Carruthers' visit will be limited to a slight prolongation of the life of these infirm old patients, though from a scientific point of view his researches into the life history of the fungus may be full of interest."

We say the above is "startling" intelligence, because of what is said about the limit of age of cacao. All authorities on the plant and its culture in South America and the West Indies, that we have come across, give a widely different opinion and generally agree with the Dutch writer Berthelink, who, in his monograph on the Cacao in Dutch Guiana, states that no tropical product gives more trouble to the planter, or proves less certain success, up to its tenth or twelfth year, than Cacao; but after that all should be plain sailing, with little or no trouble, and the prospect of steady continuous crops *up to a hundred years*. The writer further quoted instances of "Cacao Walks"—as plantations are called—in Guiana that had gone on bearing for quite a century. Of course South America is the natural habitat of "Cacao" and the deep rich soil of the Guianas and Amazon valley is no doubt specially favourable; but wherever the plant has been established in fairly good soil in valley "poekets" or in alluvial expanses in Ceylon, we should be confident of a far longer term of productive life than is given by the pessimist quoted above. The risk of disease, such as is now engaging the attention of the Cryptogamist, Mr. Carruthers, must of course be taken into account, apart from soil or situation.

It will be remembered that Mr. R. S. Fraser of Kandenewara and Warriapolla—like Mr. Tytler—before commencing Cacao cultivation in Ceylon, visited Trinidad, and we have just received from that Colony, Proceedings of "The Agricultural Society," which include a very full and valuable Report, giving elaborate analyses of soils and of fruit in all stages from different West Indian Colonies—the two kinds of Cacao dealt with being "Calabacillo" (a new name) and "Forastero." There are more than a dozen pages of analyses alone. In Ceylon we can have no soils to compete with those here detailed. Types of good cacao soils are given for Demerara, Guiana, St. Vincent, Trinidad and Nicaragua, and we must quote the table with the results obtained, into our *Tropical Agriculturist*. Meantime, it is of interest to learn from the Report :—

From these figures it appears that the cacao tree whilst storing up in the plant itself relatively large proportions of the important elements of plant food present in the soil, requires for the yearly production of young shoots, leaves and fruit not less than 138 lb. of nitrogen, 64 lb. of phosphoric anhydride, 94 lb. of potash, 104lb. of lime and 31lb. of magnesia. Under careful conditions of agricultural practice, however, of this great annual drain upon the soil but 8·7 lb. of nitrogen, 4·5lb. of phosphoric anhydride, 3·7 lb. of potash, 1·4lb. of lime and 1lb. of magnesia are necessarily removed from it, the remainder becoming more or less available again for plant food by the decomposition of the fallen leaves, pruning and husks upon the land. Of the, in round numbers, 130lb. of nitrogen returned to the soil a considerable proportion, possibly 20 to 30 per cent. may be lost during the decomposition of the vegetable matter, but where the trees are shaded by the nitrogen-collecting Bois Immortel or Oronoque tree (*Erythrina velutina* and *E. umbrosa* which are used on the islands, or *E. glauca* which is used in Guiana) doubtless much of the amount thus lost is recouped to the soil. Hence from these considerations, we are led to the conclusion that a good cacao soil should be one capable of yielding to the tree in the course of years a somewhat high proportion of the important constituents of plant food without exhaustion, and also capable of rapidly rendering again available the large quantities of manurial matter returned to it in the forms of prunings, leaves fallen and broken pods. It must in addition be one in which the course of nitrification readily take place; in other words, a fairly rich friable and well drained soil.

Again, as to manuring, we are told :—

In the absence of direct experiments on the manuring of cacao we have formed our opinion that where the Erythrinæ are used as shade trees, manuring should be directed largely towards the upkeep of the potash and phosphates necessary to enable the shade trees to do their part as nitrogen collectors and that where no shade trees are used the mineral manuring ought to be more largely supplemented by nitrogen. Thus the following mixture or mixtures of other materials yielding the same proportions of nitrogen, phosphates and potash per acre might be advisedly tried on cacao plantations :—

	Erthrinæ used for shade. cwt.	*Not shaded.* cwt.
Nitrate of soda ..	1	2
Superphosphate of lime 36 per cent. soluble ..	$\frac{3}{4}$	$\frac{1}{2}$
Potash sulphate ..	1	$\frac{1}{2}$

The materials should be well mixed and applied in quantity according to the number of trees planted per acre around each tree at a distance of about two to three feet from the stem.

But the most interesting portion is the conclusion bearing on "pests," only unfortunately the tree gets little attention—nothing being said of "fungus" or "canker"—as compared with the fruit. We quote in full :—

Pests affecting cacao plantations.—This country being particularly suited over vast areas of its extent for the cultivation of cacao, we availed ourselves of opportunities for investigating some of the ailments that affect both trees and fruit. Two or three species of borers prey on certain trees, but on healthy plantations are not a serious pest, the trees growing under unfavourable conditions of soil, drainage, &c., suffering most from the attacks. Much of the prevalence of these pests is due to the amount of dead brushwood lying about on plantations dropped from the shade trees or left from pruning of the cacao. Plantations kept clear of dead wood would not suffer much. A more serious affection is the fungoid disease to which the fruit is liable and is often attacked with. Fruit so attacked are called by plan

ters "Black" cacao. The fruit is subject to it i many cacao growing countries. The disease as far as we can ascertain is, although present, not very common in this colony. The external signs of an attack of the disease consist of the following: first a minute brownish black spot or spots forms on the outside of the pod as a rule towards the lower part of it but freqnently in the middle and occasionally near or at the top. In the majority of cases this first appears at the time when the cacao fruit has attained a considerable size and is approaching its period of ripening. The spot or spots rapidly increase in size producing large patches of a blackish brown colour which appear over the lower part of the pod, in the middle of it or all over the top and if the fruit is allowed to remain on the tree it rapidly becomes black all over and partially rotten.

On opening an affected pod when the disease has somewhat advanced it is found that the pulp surrounding the beans in the immediate vicinity of the blackened part of the husk is slightly discoloured, whilst in the more advanced stages of the attack the whole of the pulp becomes brownish yellow in colour and evolves a characteristic sour and somewhat offensive odour. Later it quite dries up, leaving the beans bare.

Where a diseased pod is in contact with a healthy one the disease in many cases extends to the healthy one. Microscopical examinations of the diseased fruit show that the blackened exterior is occupied by the mycelium of a fungus which gradually makes its way from the husk into the pulp surrounding the beans and finally into the beans themselves. The blackened husks if kept for a short time becomes covered with a light coloured incrustation consisting of vast numbers of the spores of the fungus. We have found that these spores when brought into contact with healthy fruit give rise to the same disease. We have been informed by J. H. Hart, Esq., F.L.S., that this disease or a similar one occurs occasionally in Trinidad but is there not looked upon as serious and is generally ascribed to an excess of moisture. We have recognised the disease as occurring commonly in one of the West Indian islands. It is common and has produced much injury in Surinam, from which colony we have seen and examined pods affected by it.

Analyses were made of diseased pods, and the following gives the composition of the dry matter of the whole fruit of the variety "Forastero" in a healtby and in a diseased state:—

		Healthy.	Diseased.
a.	Organic matters ..	95·93	94·43
	Phosphoric anhydride..	·81	·59
	Sulphuric anhydride ..	·18	·19
	Sodium chloride ..	·06	·11
	Iron peroxide ..	·05	·04
	Manganese oxide ..	traces.	·01
	Calcium oxide ..	·22	·27
	Magnesium oxide ..	·65	·59
	Potassium oxide ..	2·03	2·85
	Sodium oxide ..	·03	·40
	Silica ..	·04	·58
		100·00	99·98

Taking into consideration that the healthy fruits analysed were quite ripe whilst the diseased ones had only attained about two-thirds of their normal development, the variations in the analytical figures have but little significance. As the contents of nitrogen and of the mineral constituents derived from the soil varied but little in the two cases, probably the prevalence of black cacao in any place is not connected with defects in the composition of the soil. Wherever we have seen it occurring the diseased condition has appeared to be closely connected with an undrained condition of the soil or with dampness resulting from over-shading and over-crowding the trees. We consider that the remedial treatment consists in the proper drainage of the soil and judicious pruning of both the cacao and shelter trees to let in light aud air. All affected pods should be separated from the apparently healthy ones, broken at a distance from the trees and the husks either burnt or else treated in heaps with quick lime an covered with soil. As an alternative the husks might be treated with a solution of half a pound of sulphate of iron (green vitriol) to one gallon of water or with Bordeaux mixture, but we are satisfied that the destruction of the pods by burning is the most effective process.

When trees are at all badly affected it may be advisable to spray them with Bordeaux mixture prepared in the following manner:—Dissolve six pounds of copper sulphate (blue vitriol) by suspending it in a coarse cloth bag near the surface in four gallons of water contained in a wooden or earthen vessel. Slake six pounds of quick lime (do not use air slaked or agricultural lime) in four gallons of water; mix the two and when thoroughly mixed, insert into the liquid the freshly polished blade of a knife and leave for a few minutes. If the blade then shows a coppery discolouration more lime must be added until upon immersion it ceases to do so. Dilute the mixture with water to about 40 or 45 gallons.

We give this receipt as the mixture may be found efficacious in fungoid diseases of fruit and other crops of which the smuts so common on mango and orange trees may be mentioned as instances.

There is nothing here to help us in regard to the subject of Mr. Carruthers' investigation; but all through the Report under review, a great deal is made of trainage and clearing the soil, and also of "judicious pruning." But we do not think that Ceylon cacao planters have failed of their duty in respect of any one of these particulars.

a Containing nitrogen .. 1·52 1·64

OUR MAP OF THE PLANTING DISTRICTS OF CEYLON.

A FEW OF THE TESTIMONIALS RECEIVED.

H. E. THE GOVERNOR.

His Excellency desires me to convey to you his thanks for your new Map of the Planting Districts, which will be most useful. It is in fact just the sort of thing we have been wanting for some time.—Yours truly,

R. WARD JACKSON.

The Queen's House, Colombo, 7th Dec. 1897.

FROM AN OLD SUBSCRIBER.

I must send you a few lines to wish you a merry Christmas, and thank you for the new map of the Estates: its arrival has been one of the events of the week. Long-looked-for, come at last. Although I don't know all the districts, and am therefore no authority on the geography of Ceylon estates, yet so far as I do know, I think it is beautifully done and wonderfully accurate. The marvel is that you have been able to produce so useful a map of the planting districts and, issue it at the low figure fixed. One would think that you expected to sell them by the thousand before they could pay you for the trouble and cost you must have let yourself in for, to produce such a map. For my own part I thank you very much for undertaking the work, and congratulate you on the result, and hope it may prove, as it deserves to be, financially a success.—Yours faithfully,

A SUBSCRIBER.

Matale N.E., 26th Dec. 1897.

FROM "TIMES OF CEYLON," DEC. 15TH.

We have to acknowledge receipt from the *Observer* Office of a new large map of the Planting Districts of Ceylon, brought up to date, and such as planters and others have long needed. The map, which

is on a scale of three miles to an inch—with a small map in the corner for speedy reference—shows principal roads, railways completed, railway stations, resthouses, boundaries of provinces "pearl stations," and gem and gold districts, and most useful of all, the estates in the new and old planting districts. These include, besides the former and better-known coffee districts, the new ones that have been, and are still, springing up in the low-country, such as the Kurunegala district—where the extension of tea and coconut cultivation during the last few years has been wonderful,—the Panadura and Kalutara districts, the Veyangoda estates, the Morawak Korle extensions, and the estates scattered throughout the Southern Province at Udagama, Ambalangoda, and near Galle. The publishers certainly deserve credit for their work.

FROM THE "CEYLON EXAMINER," DEC. 15.

With characteristic zeal in everything likely to advance the planting interests of the Island, Messrs. A. M. and J. Ferguson of the *Ceylon Observer*, have just published a splendid map of the Planting Districts of Ceylon, showing the position of the principal Tea, Cacao and Coffee Estates in the country. The scale of the Map, 8 miles to the inch, has enabled its projector to delineate the natural features of the districts exploited for planting purposes, in a clear and comprehensive style. The Map cannot but be therefore, of the highest value to intending prospectors in search of suitable localities for cultivating the staple products that already form the objects of agricultural enterprise, or for the introduction of new ones for which peculiar conditions in regard to altitude, situation and so forth are essential. The range of country exhibited is from the Nalande Oya north of the Matale District to Ambalatota in the South in the vicinity of Hambantota, and from the West Coast of Ceylon to Monaragala District in the East. Each Planting District is distinguished by colour as well as by name, and to the ordinary traveller the inclusion of Principal Roads, Railways completed, Railway Stations, and Resthouses must prove of no small utility. A printed list of all the Tea Districts with the altitude of each forms part of the contents, while a smaller map on the same sheet in which is marked the Gem Districts, Pearl Oyster Stations, and the places where gold has been traced, will no doubt be of service to the mineralogist and the scientific explorer.

ROM THE "CEYLON INDEPENDENT," DEC. 17.

Messrs. A. M. & J. Ferguson of the *Ceylon Observer* have placed both the planting and mercantile community of Ceylon, it may be added the general public as well, under a considerable debt of obligation by their publication for the first time of an up-to-date map of the Planting Districts of Ceylon showing in a clear and accurate manner the position of all the tea, cacao, cardamom and coffee estates in the Island. A reliable map of this description has long been a desideratum and we had a guarantee that if Messrs. A. M. & J. Ferguson undertook the work they would do it thoroughly and turn out something that would reflect credit upon their enterprise, but we confess that the excellent result achieved surprises us. It has been a colossal task, but the preparers have not shrunk from the difficulties in their path, rendered all the more acute by the rapid development that has gone on and is continuing to this day. We can well believe that every effort has been made to secure reliable information and we can only find words of unstinted praise at the skilful way such information has been utilised. The size of the map is 48 inches by 36 inches, and on it the position of nearly 1,600 estates can with ease be located. It makes an invaluable reference and should form an indispensable ornament in every bungalow and mercantile office in the Colony. The proprietors hope to make it the basis of a series of maps which "issued from time to time will prove useful records of the progress of Tea Planting in Ceylon." The map is arranged on a scale of three miles to the inch and the principal roads, railways with stations and the resthouses are equally clearly defined. There is also a list of the altitude of the various planting districts, and a small key map of the Island of Ceylon showing the gem districts, pearl oyster stations and the places where gold has been traced. The work was lithographed by Messrs. Standidge & Co., Ltd., of Old Jewry at their extensive works in Worship street Finsbury, and the proprietors accord ungrudging testimony to the care and efficiency with which this part of the labour has been carried out.

"CATHOLIC MESSENGER," DEC. 18.

We received from the *Observer's* Office a new large map of the Planting Districts of Ceylon, which will be very useful to all the Planters. The map which is on a scale of 3 miles to an inch, with a small map in the corner for speedy reference, shows principal roads, railways completed, railway stations, resthouses, boundaries of provinces, pearl stations, gem and gold districts and, most useful of all, the estates of the new and old planting districts. On this map are marked also the new estates that have been, and are still, springing up in the lowcountry, such as the Kurunegala, Panadura, Kalutara districts, the Veyangoda estates, the Morawak Korle extension, and the estates scattered throughout the Southern Province at Udugama, Ambalangoda and near Galle. This useful map, will no doubt, find a ready sale among the Planters.

"MADRAS MAIL," DEC. 20.

Messrs. A. M. & J. Ferguson, Proprietors of the *Ceylon Observer*, have just published a very fine map of the Planting Districts of Ceylon, showing the position of the principal Tea, Cacao and Coffee estates. The scale of the map is three miles to an inch, and various simple devices, marginally noted, are used to indicate principal roads, railways completed, railway stations, rest houses and boundaries. The various districts are distinguished by colours as well as by name. To the right of the map is given a list and altitude of tea planting districts, some fifty in number, while in the left hand corner is a small map of the Island in which are shown the gem districts, the pearl stations and the gold producing tracts. The map is likely to prove most useful to the colonists and reflects great credit on Messrs. Standidge & Co., Lithographers of Old Jewry, London, who produced it.

AMSTERDAM CINCHONA SALES.

Our Amsterdam correspondent telegraphs on Thursday evening (Dec. 9th.) that of the 8,842 packages of Java cinchona offered as today's public sales only 4,889 packages sold, at an average unit for the Manufacturing bark of 7c. per half-kilo (equal to 1¼ per lb.) against 7·90c. paid at the auctions on November 4. Today's sale has therefore resulted in a decline of about 12 per cent, the general tone throughout being dull

and with a downward tendency. The American and English manufacturers bought 5,372 kilos; the Auerbach factory, 2,613 kilos; the Brunswick factory 5,069 kilos; Mannheim and Amsterdam factories 1,552 kilos; Frankfort and Stuttgart factories 2,421 kilos; various other buyers 4,921 kilos. The prices realised for Manufacturing bark ranged from 10¾c. to 60½c. (equal to 2d to 12d per lb.) and for Druggists' barks from 10c. to 99c. (equal to 1 3-8th d. to 1s 6d per lb).—*Chemist and Druggist.*

THE AMSTERDAM DRUG-MARKET.

Our Amsterdam correspondent writes, under date of December 8, that the Cinchona market remains firm, everybody anxiously awaiting the result of the heavy auctions (equaling 40.793 kilos sulphate of quinine) on December 9. Quinine shows no change, business in this article being very restricted. There has been rather more speculative demand for Cubebs, and offer of 12c. per half-kilo have been refused for fair bold berries. But the stock, both in first and second hands is very heavy. A parcel of 186 kilos of Java Vanilla has been sold by tender at a secret price. The lot was valued at from 6f. to 10f per half-kilo. There has been some trade in Java Cannaga oil, of which about 100 bottles have been taken by dealers. The present value of good quality is about 7·50f. per bottle. Cassia fistula in pods is somewhat lower. About 200 baskets have lately been sold, but the price has not been made public.—*Chemist and Druggist.*

THE SCHOOL OF AGRICULTURE IN 1897.

During the past year the School of Agriculture has been the subject of much criticism. Owing to the lack of encouragement on the part of Government and the reorganization of the Technical School as a Training College for employees in the various scientific departments of the Colony, the numbers of students in the School of Agricultural fell considerably. This state of affairs gave rise to a good deal of comment, some going the length of advocating the suppression of agricultural education, but the large majority rightly demanding the reorganization of the institution on a more liberal scale. The school has undoubtedly been neglected by the State and given small opportunity for carrying on the useful work which is expected of it owing to a want of funds and any kind of support from Government. It has been officially announced that a Commission is at present dealing with the school, and the result, if the interests of the Colony be consulted, should be that the institution will be set on a proper footing with wider scope for doing the good work which it is capable of doing. The School of Forestry for training students for the Forest Department has proved a useful adjunct to the Agricultural School and now supplies the necessary technical education, which was much required for employees in the Forest Department.

The Veterinary Surgeon attached to the School has been given an Assistant who is stationed in the N.C. Province, and between these two officers some progress has been made towards the suppression of cattle disease in the Island.

The Government Dairy has proved an unqualified success both as a source of revenue to Government and as an agent in the improvement of the indigenous breeds of cattle in Ceylon.

OUR COMMERCE FOR 1897.

(Special Report by a European Merchant.)

Although returns for the year will not be completed till some time in January, yet those figures which are available now are complete to a point sufficient to draw fairly accurate comparisons with those for 1896:—

A. EXPORTS.

1.—COFFEE.—In 1896 Ceylon exported 22,747 cwt.
„ 1897 „ exports not likely to exceed 19,250 „
showing a falling-off, of 3,497 „

2.—CINCHONA.—In 1896 Ceylon exported 1,309,560 lb.
„ 1897 Ceylon exports not likely to exceed 650,000 „
showing a falling-off, of 659,560 „

A temporary increase in export of this bark might be looked for in 1898, as prices in London are dearer by 100 per cent than what they were about this time in 1895.

3.—TEA.—In 1896 Ceylon exported over 108,000,000 lb.
„ 1897 Ceylon exports not likely to exceed 114,500,000 „
showing an increase of 6,500,000 „

4.—COCOA.—In 1896 Ceylon exported a little over 31,000 cwt.
„ 1897 Ceylon exports expected to amount to 35,000 „
showing an increase of 4,000 „

Market for cocoa steadily improved during the last six months of this year.

5.—CARDAMOMS.—In 1896 Ceylon exported a little over 452,000 lb.
„ 1897 Ceylon exports will, it is thought, exceed 515,000 „
showing an increase of 63,000 „

Prices for cardamoms show a sharp decline as the year closes, but for most of the year prices have been exceptionally good.

6.—CINNAMON.—In 1897 exports of quills and chips considerably exceed these for 1896, and prices have gone back quite 1d per lb. both in Europe and locally, during the closing months of the year.

7.—COCONUT OIL.—In 1896 Ceylon exported a little over 343,000 cwt.
„ 1897 Ceylon export is expected to exceed 410,000 „
showing an increase of 67,000 „

Exports of oil to India in 1897 are double those of 1896. Exports to the Straits also show a large increase in 1897. Rupee values have not fluctuated violently during the year.

8.—COPRA.—In 1896 Ceylon exported a little over 50,000 cwt.
„ 1897 Ceylon exports will probably aggregate 107,500 „
showing an increase of 57,500 „

The large increase in export of copra this year is almost entirely due to a strong demand from Hamburg, where other copras were in smaller supply than usual.

9.—DESICCATED COCONUT is expected to show an increase in quantity exported, of 12½ per cent over 1896. Prices unfortunately for this industry remain at a very low figure.

10.—PLUMBAGO.—Exports for 1897 will show a slight increase over those for 1896. Prices during 1897 have ruled higher all through than for many years past, and owners of pits must have made good profits. The market closes very firm and dear prices seem likely to rule for some time.

11.—COCONUTS.—Exports this year will be much about the same as for 1896.

12.—COIR GOODS, ROPE, YARN AND FIBRE all will show an important increase, but Yarn and Fibre especially so.

13.—EBONY AND SAPANWOOD, both will show a large decrease.

14.—PALMYRA FIBRE AND KITUL FIBRE will also show a falling-off.

B. IMPORTS.

RICE.—The price of rice during the year ruled very high, gradually increasing from January till August, when it was dearest. Since then prices have been easier, and as the year closes good Kuruway is obtainable at R3·80 per bushel in Colombo.

DRY GOODS.—Imports of Manchester and Continenta goods have been considerable. Exchange has beeu favourable to importers; and as the year closes with high exchange, dry goods may be expected to arrive on a fairly large scale during the first half of 1898, and supplies will be ample for all demands.

Business was to some extent impeded during the latter half of this year owing to the slip on the Railway line. In anticipation of "Tivali" demand, upcountry dealers who came to Colombo for supplies, had in many instances to return without these—being unable to get them up in time for Tivali—thus to some extent a market was lost. The small cash balances due to coolies after deductions for rice have also tended to curtail the offtake.

ESTATE REQUISITES have on the average ruled low in price.

METALS have been imported in fair supplies.

HABERDASHERY GOODS.—A fair business has been done during the year.

C. SHIPPING.

With the exception of the closing part of the year, tonnage has been ample and on the average freights ruled low. Increased facilities for loading and unloading at the wharf and jetties are urgently needed to expedite the despatch of steamers. The quantities discharged from and loaded into steamers—taken per hour of continuous work—compare unfavourably with former years.

REVIEW OF THE GENERAL NATIVE TRADE 1899.

(*By a Sinhalese Trader.*)

The native trade in the Pettah during the past year, has been looking up, in spite of prices fluctuating, consequent on the rise and fall in the value of our rupee. Luckily for importers of European goods, exchange rose opportunely, which enabled all Christmas goods to be placed at a reasonable value. A glance at the Main Street shops will convince one, that importations have beeu heavier thau previous years. Some shops show better quality for instance iu Drapery and Millinery, F. X. Perera's have kept up their usual reputation for good quality, fair value, and politeness.—"The Diamond Jubilee Warehouse" which was opened during the celebrations of Her Majesty's Diamond Reign is dressed in good style. Abdul Carrim also deserves mention for his usual display of superior goods, especially in Millinery and Drapery, and last, but not least, "The Pettah Cash Drapery Warehouse" owned by the general N. S. F. established in 1893, though still in its infancy, has done well iu following in the wake of her elder English sister—all goods imported being of superior quality and finish.

SPIRITS AND WINES business has beeu brisk in good brands, but the market is glutted with spurious inferior rubbish which ought to be prohibited by the City Fathers.

OILMANSTORES.—Trade in this line has shown up well. Importations have been heavy. Australiau Produce is making headway. Germany is still pushing her biscuits, dealers looking to cheapness rather than quality. Special mention may be made of A. Simon Fernando as being the largest wholesale dealer and Coruelius Fernando and Sons may be reckoned the largest retailers. Messrs. V. P. Perera and Sons, who established themselves about 32 years ago, have unfortunately collapsed; some attribute failure to recent bad management.

LAMPWARE, GLASSWARE, HARDWARE, CEMENT, OILS PAINTS &c., did a very big business during the year, at steady rates, caused by increased demands for building purposes. Germany has held her own in nearly all the above lines.

PAPER, PATENT MEDICINES AND DRUGS' TRADE.—In these lines have been very favourable, Stearn's Wines Scott's Emulsion, &c, making good headway. But the line, which showed the greatest activity, and assumed large proportions, was Paper of all descriptions. Here again German makes, especially in printings and coloreds found great favor. Sorry to find that the Indian Paper Mills have fallen off considerably during the year. The Ba ly Mills were offering stocks on hand at cutting prices, but very little changed hands.

CHINESE AND JAPAN goods: transactions were much restricted, a little passed in Canton matting. Paper lanterns were in great demand during the Jubilee, but importations fell far short of demands. Fire crackers came into the market in large quantities and found good sale.

INDIAN PRODUCTS, RICE.—The demand during the year has been larger than ever, rates fluctuated daily for all kinds except Rangoon raw rice which was rather sluggish, owing to abundant supplies. Business done during the year was very steady. The Chetty firms almost monopolising the trade. Prices ran up to R6 per bushel for Muttusamba. Supplies were up to demands. The high prices ruling may be attributed to short crops caused by long drought throughout India.

CASTOR OIL, CASTOR CAKE, FISH MANURE, AND CATTLE BONES: next to Grain these form a very important importation, large business has been done with European Firms at steady prices, the trade being almost monopolised by the Tuticorin Tamils.

SUGAR.—Importations were heavy during the year, demands for the middle grades were great, but importations were restricted owing to European importations, German Granulated crushed has held the market firmly and bids fair to maintain its present position. Importations have been heavier than ever of the latter grade.

KEROSINE OIL.—Messrs. Carimjee Jafferjee are monopolising the trade in oil. "Daylight" as usual found most favor, "Sumatra" bids fair to do good business. The largest consumption has been iu Russian Tank Oil.

GRAIN, COTTON SEED, &c.—These did a free sale as usual in spite of the heavy prices that ruled.

DRY FISH AND MALDIVE FISH: rates have been fully maintained and the bulk of the business in the former is in the hands of the Tuticorin Tamils. In the latter article the trade is almost entirely in the hands of Messrs. Carimjee Jafferjee, the Bombay merchants, who have the Maldivians sellers well in hand; shipments arriving in their own schooners. The demand was great, stocks plentiful. Prices exorbitant; a month or two ago rates ran up to R45. About four years ago Maldive-fish was sold at R14·50 per cwt. Monopoly is the only reason one can give for this unjustifiable raising of prices.

BOMBAY AND CALCUTTA FLOUR.—The Bombay Flour Mill Co.'s brands were to the front, landings heavy and the trade satisfactory: but the Plague having broken out iu Bombay, direct arrivals were nearly nil. The Bengal Flour Mills Co., did a fair trade. Importations from the former Company are now coming in freely and good business is being done in their brands.

SUNDRY INDIAN PRODUCE CURRY STUFFS, &c.—There was keen competition in these, but prices have been maintained. Chillies ruled at unheard-of prices, and Shellots or Red Onions were ditto.

EXPORTS.—Leading native firms did good business in Ceylon Produce, heavy consignments of Coconuts, Coconut Oil, Desiccated Coconuts, and a little Tea, Plumbago, &c., have been shipped to England and the Continent, Madras, Calcutta, Coconada and Singapore drew large shipments of oil.

NATIVE JOURNALISM.—Success is still crowning the printers at Pettah. "Srilankodaya," another native journal, has come into existence during the year under review, and one or two other magazines,

Sale of Ceylon Plantations (Tea and Coconut) during 1897.

District.	*Name of Estate.*	*Name of Purchaser.*	*Amount.*
Kegalla	Hunugalla	Goomera (Ceylon) Tea Estate Co., Ltd.	£ 7,250
Maskeliya	Glencoe	Mr. Kennedy	,, 10,000
Negombo	Ekelle, Allegalle *	,, A. E. de Silva	R 35,000
Dolosbage	Havilland and Donoughmore	The Gangwarily Tea Co., Ltd.	£ 9,000
Medamahanuwara	Ensalwatte	Messrs. E. J. Young, Chas. Young and Eric S. Anderson	,, 1,000
Bogawantalawa	Lynford	Mr. W. W. Maitland	,, 25,000
Ramboda	Tavalamtenna	,, Dobbs	,, 3,500
Balangoda	Balakotenna	Consolidated Tea and Lands Co., Ltd.	R 25,000
Gampola	Gadadessa	Mr. E. de Silva	,, 10,000
Do	½ Pussetenne	,, H. J. Charsley	,, 40,000
Panwila	Kaduwella	,, F. Tatham	,, 50,000
Dimbula	Langdale	The Dimbula Valley Tea Co., Ltd.	£ 22,000
Bogawantalawa	½ Loinorn	Mr. W. A. Sparling	,, 3,200
Kelani Valley	Polatagama and New Polatagama	The Yatiyantota Ceylon Tea Co., Ltd.	,, 58,650
Do	We-oya	do do do	,, 28,325
Do	Walpola Group	do do do	,, 39,725
Pussellawa	Kanapediwatta, Blackford and St. Cuthbert	The Kanapediwatte Tea Co., Ltd.	R322,200
Galle	Mount Pleasant	Dr. C. E. de Silva	,, 22,000
Kalutara	Neboda Group, consisting of Neboda, Deegalla and Narthupane	The Neboda Ceylon Teas Co., Ltd.	R170,000
Maskeliya	Lower Cruden	Mr. Cotesworth	£ 8,500
Pussellawa	Heatherly	Ceylon Proprietary Estates Co., Ltd.	,, 500
Matale East	Cattaratenne	Messrs. W. H. Tindall & Co.	,, 8,400
Wattegama	Flowerdew	Mr. Shelton Agar	R 5,900
Kurunegala	Bridstowe	The Kurunegala Estates Co., Ltd.	,, 61,000
Do	Matilda Valley	do do do	,, 9,000
Do	Ambanpitiya	do do do	,, —
Do	Moratenna	do do do	,, 19,000
Do	Pittiakanda	do do do	,, 85,000
Maskeliya	Blairavon	Mr. J. Shannon Stevenson	£ 8,500
Passara	East Gowrakele	The Namunakula Tea Estates Co., Ltd.	£ 5,0 0
Kurunegala	Handrokanda	Messrs. J. A. Roberts and A. H. Taylor	,, 5,000
Bamberabotua	Welewale Mukalana	The Consolidated Tea and Lands Co., Ltd.	R 21,600
Gampola	Ranawelle	Mr. Charles Blair	,, 37,000
Dimbula	Mayfield and Pittenweem	Mr. F. W. Jamieson	£ 21,750
Udapussellawa	Coneygar	The Standard Tea Co., of Ceylon, Ltd.	,, 3,500
Dikoya	½ Marlborough	Messrs. L. G. Young and R. H. Eliot	,, 5,500
Negombo	Hunupitiya Mill †	Ceylon Tea Plantations Co., Ltd.	R 45,000
Matale North	Urulindetenne	The Hapugahalanda Tea Co., Ltd.	,, 12,000
Dimbula	Mayfield and Chalmers	The Mayfield (Dimbula) Tea Co., of Ceylon, Ltd. }	£ 63,000
Matale	Nicholoya	Do do }	
Kurunegala	Daisy Valley † ‡	The Amalgamated Tea Estate Co., Ltd.	R 130,000
Bogawantalawa	Bridwell and Kirkoswald	The Bogawantalawa District Tea Co., Ltd.	£ 110,000
Do	Elbedde	Do do	,, 55,000
Do	Bogawanna	Do do	,, 30,000
Negombo	Pallanchena §	Lady De Soysa	R 73,000
Dikoya	South Wana Rajah	The South Wana Rajah Tea Estates Ltd.	£ 13,000
Gampola	Dartry	Do do	,, 20,000
Do	Blackburn	Do do	,, 6,600
Ambaganuwa	Koladenia	Mr. C. P. Plant	R 42,000
Do	do	Messrs. Edgar Smith and F. H. Davis	,, 85,000
Kegalla	Rangegama	Messrs. C. Blair and A. M. Blair	£ 3,500
Matale	Pitakanda Group which includes, Pitakanda, Dambulagalla, Kinrara and Sylvakanda.	The Pitakanda Tea Co., of Ceylon, Ld.	R 240,000
Kurunegala	Puswelgodella ‖	Ibrahim Bin Ameth	,, 8,000
Negombo	Brankajayah	Do	,, 50,000
Batticaloa	Forest Land ¶	Admiral Drummond	,, 40,000
Nuwara Eliya	Kandapolla }	The Kandapolla Tea Estates Co., Ltd. {	£ 23,125
Do	Monkswood }	The Kandapolla Tea Estates Co., Ltd. {	,, 19,920
Ramboda	Rushbrook }	The Kandapolla Tea Estates Co., Ltd. {	,, 5,000
Do	Frotoft }	The Kandapolla Tea Estates Co., Ltd. {	,, 14,282

* Cinnamon principally. † Oil and fibre mills. ‡ Coconut and Cocoa. § Cinnamon and Coconuts. ‖ For Coconuts. ¶ Cinnamon.

SALE OF CEYLON PLANTATIONS (TEA AND COCONUT) DURING 1897.—(*Contd.*)

District.	*Name of Estate.*	*Name of Purchaser*	*Amount.*
Bogawantalawa	½ Detenegalle	Mr. A. G. Layard	£ 6,000
Pussellawa	Beaumont, Bagatelle		
Do	Clive, Winsley		
Do	Black Forest	The Ceylon Proprietary Tea Estates Co., Ltd.	,, 64,400
Maskeliya	Forres and Warburton		
Nilambe	Laurawatte		
Dimbula	Ardlaw	The Agra Tea Co. of Ceylon, Ltd.	,, 13,025
Do	Wishford	do	R200,000
Batticaloa	Kalkudah*	do	,, 60,000
Siyane Korale (Veyangoda)	Kandebodda*	Mr. C. Pieris	,, 32,200
Alutkuru Korale (Welisara)	Welisara Kurundnwatta†	,, D. S. Senanayake	,, 13,300
Do	Anningkande‡	,, A. E. de Silva	,, 16,100
Dikoya	Exmouth or Donnybrook & Frome or Midford	The Donnybrook Tea Co., Ltd.	,,102,600
Puttalam	Setavana§	Mr. T. Valuppillai	,, 33,000
Kurunegala	Aspokunawatta§	The Consolidated Tea and Land Co., Ltd.	,, 48,000
Trincomalee	Forest land (347 acres 1 rood and 23 perches)‖	Mr. H. V. Lushington	,, 5,288
Chilaw	Haldanduwana¶	,, H. Bastian Fernando	,, 60,000
Badulla	Moragolla	,, S. H. Pearless	,, 61,500
Chilaw	Letchmey**	,, T. Valuppillai	,,162,000
Dikoya	Erroll	Kandapola Tea Co., Ltd.	,, 14,575
Bogawantalawa	¼ North Cove	Mr. VanCitters	,, 5,000
Do	Devonford	The Kandapola Tea Co., Ltd.	,, 13,148
Ratnapura	Mahawala	The Mahawale Tea Estate Co., Ltd.	,, 3,000
Badulla	Oodoowere	The Oodoowera Estate Co., of Ceylon Ltd.	,, 85,000
Maskeliya	Laxapana	The Ceylon and Indian Planters' Association Ltd.	£ 65,000
Do	Maha Elliya		
Yakdessa	Kandal Oya	do	,, 16,000
Panwila	Zululand	Mrs. Bird	R 32,000
N. Kadugannawa	Alagala and Dekanda	,, W. S. Bennett	£115,000
Kadugannawa	Bellongalla	Messrs. R. P. Warlow & C. G. Turberville	,, 3,000
Dimbula	Lindula and Llan Thomas	The Lindula Tea Co., Ltd.	,, 37,050
Maskeliya	Bitterne	The Gangawatte Estates Co,, Ltd.	R 84,500
Do	Gangawatta	do	,, 93,000
Dolosbage	Barnagalla and Dedugalla		
Panwila	Goonambil and Eriagastenna and ¾ Raxawe	The Central Province Ceylon Tea Co., Ltd	£ 92,500
Ambagamuwa	Wayweltalawa		
Dikoya	Berat		
Pussellawa	Castlemilk		
Dikoya	Lawrence	Messrs. Dent Brothers	,, 44,000
Alagala	Kotuagodella and Hingulgolla	Mr. H. F. Harris	R 38,000
Dolosbage	St. Helen	Ederepolla Tea Co., of Ceylon, Ltd.	£ 6,000
Nuwara Eliya	Denmark Hill	The Nuwara Eliya Tea Estates Co., Ltd.	£ 12,500
Do	Hethersett		,, 24,000
Ratnapura	¾ Carney and Asoka	Mr. G. W. Greenshields	R 66,000
Dikoya	Lynsted	The Kanan Devan Hills Produce Co., Ltd.	£ 30,000
Kalutara	Maddegedere	do	,, 34,600
Kurunegala	Chena land 165 acres‖	N. D. P. Silva	R 8,300
Kelebokka	Relugas	The Central Province Co., Ltd.	£ 10,000
Udagama	Riseland	The Eastern and Ceylon Tea Estates and Trading Co., Ltd.	,, 1,400
Chilaw	Walahapitiya	Mr. T. Sanmugam	R171,000
Kotmale	⅔ Gingran Oya	Mr. A. Padwick	£ 5,500
Veyangoda	Kalagahera*	Mr. M. J. Cooray	R 7,600
Henaratgoda	Kiriketta	Dr. Johnson	,, 15,000
Dimbula	Ouvahkellie	The Vellekellie Tea Co. of Ceylon Ltd.	,, 20,750
Do	Vellekellie		,, 17,750
Pussellawa	Rosalie	The Ceylon Proprietary Tea Estates Co., Ltd.	R 40,000
Balangoda	Chetnole	The Consolidated Tea and Lands Co., Ltd.	£ 9,000
Kalutara	Sorana Group (including Illembe, Sorana, Dorakedakande and Waykolakande)	The Consolidated Estates Co., Ltd.	R236,000

* Cinnamon and Coconuts. † Cinnamon. ‡ Coconut and Cocoa. § Coconut 100 acres. ‖ For Coconuts. ¶ Coconuts 300 acres. ** Coconuts 218 acres.

SALE OF CEYLON PLANTATIONS (TEA AND COCONUT) DURING 1897.—(*Contd.*)

District.	*Name of Estate.*	*Name of Purchaser.*	*Amount.*
Badulla	Demodera Group (including Weywelhena, Oetumbe, Papolgashena and Ingurugama)	The Demodera Tea Co., Ltd.	£ 90,000
Dimbula	¼ Devon	Mr. Walker	,, 2,000
Dikoya	Claverton	The Lethenty Tea Estates Association, Ltd.	£ 16,000
Do	Broadoak	do	,, 20,000
Ramboda	Helbodde	Duffs Estates Co., Ltd.	,, 25,000
Do	Rangbodde	do	,, 25,000
Haputale	Wiharegalle	do	,, 10,000
Dikoya	Lawrence	The Caledonian (Ceylon) Tea Estates Ltd.	,, 44,000
Do	Venture	do	,, 50,000
Matale	Selegama		
Do	Kahawatte	do	,, 3,000
Do	Waveena	do	,, 6,000
		Total	£1,517,762 R3,382,311

CEYLON GAME PROTECTION SOCIETY.

A local meeting was held at K. C. C. on Nov. 20th, when there were present:—Messrs. J. A. Maitland (in the chair), H. C. Richmond, T. C. Robin, E. T. Clarke, M. E. Waddilove, W. Ormiston, W. G. Powell, J. Marks, R. D. Carson, A. P. Tucker, W. F. Reid, H. M. Wilson, L. R. Biddell, and T. R. Barkley, hon. secretary, *pro. tem.*

The Secretary read letter from Mr. Farr, expressing his regret at being unable to attend the meeting.

It was proposed by Mr. CARSON and seconded by Mr. ORMISTON.—That a local branch of the Game Protection Society be hereby formed, under the rules and affiliated to, the main society.—Carried.

It was proposed by Mr. BARKLEY, and seconded by Mr. WADDILOVE that Mr. Ormiston act as hon. secretary.—Carried

A committee was then formed consisting of Messrs. R. D. Carson, H. M. Philby, J. J. Robinson, J. R. Barkley, E. de Winton, W. Hermon, H. O. Hoseason, C. de Winton, J. H. Carson, A. G. Dupuis, and W. Ormiston, (Hon. Secretary.)

Mr. ORMISTON then rose to point out that in the Uva Province, the closed season might be cut short; it now ran from May 1st to October 30th. The only reason for a closed season in Uva was to prevent the slaughter of game while drinking at rivers during the dry weather, and he pointed out that the months of May and September were usually wet months and would not easily lend themselves to the poaching proclivities of the native. He would therefore propose that Government be asked to alter the closed season in Uva from the 1st June to 30th September. This was seconded by Mr. ROBIN.—Carried.

The next subject taken up by the meeting was the possession of fresh deer meat and hides during the closed season. Most of the members present had seen natives with meat in their possession, but it would seem that this was insufficient to obtain a conviction. It was understood that the poacher had to be caught *in flagrante delicto*, which was almost impossible; it was therefore proposed by Mr. Biddell and seconded by Mr. Clarke.—"That possession of fresh deer meat or hides during the closed season be made a penal offence, and that Government be respectfully asked to alter the Game Ordinance accordingly."

It was then proposed by Mr. MAITLAND and seconded by Mr. MURRIE WILSON:—"That the Government Agent of Uva be asked to issue orders to the various headmen and forest watchers of the Province to be more vigilant and in every way in their power to assist the Game Protection Society in preventing the present wholesale slaughter of deer during the closed season, the local branch of this society agreeing to pay a reward of R20 for each conviction."

A lengthy discussion here ensued and it transpired that it was a well-known fact that there was a large illicit export of horns and hides from the Southern coast, and it was believed that the light-houses aided this smuggling. It was thought expedient to enlighten the authorities on this subject and to ask the hearty co-operation of the Trinity House and port officials of Southern India in the matter.

It was unanimously carried that a cordial vote of thanks be tendered to Mr. Thomas Farr for his untiring energy in furthering the interests of the Game Protection Society.

The meeting here adjourned.

J. R. BARKLEY, Hon. Secy. *pro. tem*

CEYLON CINNAMON.

Mr. Ernest Williams offers in the "Windsor" amusing indictment of the Christmas plum-pudding. It is consecrated to John Bull, and yet most of its ingredients are foreign, Greek currants, American plums, candied peel from everywhere, French brandy! The only comfort for Mr. Williams is that the cinnamon comes from Ceylon, and Ceylon is still part of the British Empire, though you can never be sure that when you open a Tory evening paper you will not find a suggestion that Lord Salisbury is thinking of making a present of Ceylon to France. However, it is plain now that patriots cannot eat their Christmas pudding any more and we expect to hear that it has been banished from Mr. Chamberlain's household.—London *Daily Chronicle.*

Correspondence

To the Editor.

CEYLON GAME PROTECTION SOCIETY.

Dec. 1st.

SIR,—I have the pleasure to forward for publication in your columns, if you will be good enough to oblige me—a copy of the Report of a local meeting of the Game Protection Society held in Haputale on Nov. 20th. It is most gratifying to me to welcome this new departure, and I trust the example of Uva will be followed by other districts in Ceylon.

If only some enthusiastic Sportsman in each district would take up the matter of Game Protection in the same wholehearted way that Mr. Barkley has done, I am confident that real and lasting progress would be made.

I take this opportunity of recording my thanks to Mr. H. V. Bagot of Hewaheta, for his hearty co-operation.—I am, Sir, yours &c,

THOS. FARR, Hon. Secy.

[The report of the meeting referred to will be found on page 505.—ED. *T.A.*]

TEA CULTIVATION: PRACTICAL PLANTERS ON "FORKING," "DRAINS" AND THE "PREVENTION OF WASH."

Pundaluoya, Dec. 17.

SIR,—I am pleased to see "Veteran," (see page 476) drawing attention to the fact that forking on steep land does not engender wash, if carried out as he describes, namely, by loosening the soil without turning it over. I am prepared to go further and assert that it is actually preventive of wash. The chief cause of wash is the inability of the rain water to penetrate the ground ast enough when the surface soil is firm and close. Directly the soil is loosened by the proper use of the fork, the rain will soak in as it falls, and there will be no accumulation of surface water to rush down the slopes transporting valuable soil in his progress. The plants also will benefit by the well-known valuable properties of rain water and by the more perfect æration of the soil.

"Veteran" also touches upon the question of filling up drains to avoid some of the effects of drought, which, it is thought, might follow the breaking-up of the surface soil. But when the rain water has been allowed to penetrate to the subsoil, instead of being hurried off into the nearest ravine, I think it will be found that the tea plant—with its deep roots—will feel the effects of drought much less.

In connection with both the prevention of wash and the closing of drains, I would draw attention to another plan that I have been lately adopting and which has so far proved most satisfactory. This is, to fill up all the drains evenly with the prunings immediately after a field has been pruned. Paradoxical as it may seem, this really prevents the disastrous blocking of drains that so often occurs during a heavy plump of rain. There can be no accidental heading back of water. Any solid matter that falls into the drain rests where it falls—above the prunings, and is not carried along to form a dam at the first obstruction. The water filters through the rubbish, depositing any soil it has brought down, and trickles slowly away below, much of it finding its way into the subsoil. The repeated clearing out of drains is no safeguard against a block—as I have often found to my cost. The cleanest drain is at the mercy of the first rock that rolls down the hill.

I plead the following advantages for my method:—

1. The saving of soil: the water being filtered in its passage through the rubbish.

2. A great saving in expense: there being no necessity to clear out the drain until the time for the next pruning, when the accumulated soil and decayed vegetable matter will be spread over the surface below the drain, and the drain will be recharged with the new prunings.

3. The avoidance of any accidental block at one spot, with its consequent leading back of water and overflow.

4. Benefit to the tea by the freer percolation of water in its slower flow along the drain; and by the application of accumulated soil and humus.

5.—The convenient disposal of the troublesome prunings.—I am, sir, yours truly,

E. ERNEST GREEN.

THE CACAO DISEASE.

Dec. 16.

DEAR SIR,—As the investigation into the Cacao disease may benefit all growers of that product, and as it would be unfair that the cost of it should be borne by a few, I think that, as in the case of work done for the benefit of the Tea Industry, it should be met by an extra export tax on that product, to be levied till the account is closed.

This, at the rate of 25c per cwt., would probably take only one year.

Hoping you will give room to my suggestion,—I am, yours truly, A. V. D. P.

[A very fair suggestion.—ED. *T.A.*]

TEA CULTURE AND THE RISK OF APPLYING CERTAIN MANURES.

Colombo, 22nd Dec.

DEAR SIR,—With reference to your comments passed in Monday's issue of your paper on the question of tainting of the flavour of tea by the application of strong smelling manures, like blood or fish, it would read as if the chief argument of Mr. John Hughes against their use was in this direction, whilst on the contrary his principal objection against them—and raw bones—was on the ground of the risk of introducing some fungoid disease.

Mr. John Hughes laid special stress on this point and declared the use of these substances as "*dangerous*," unless treated with acid before their application.

The immense damage done by the Coffee leaf-disease, and more recently by the Cacao disease, whether due to the above cause or not, should certainly be a warning to planters not to treat this matter lightly, and in their own interest try to avoid any such risks—prevention in all cases being better than cure.

As regards the question of strong-smelling substances tainting the flavour of tea I would point out that I had been cautioned against their use by more than one authority on this matter, and as a practical demonstration one of the leading agronomists of France submitted to me samples of wine from a vineyard, which

had been manured with a strong-smelling fertiliser, and the flavour of which had been distinctly affected, whilst the wine from the unmanufactured plot of the same vineyard was all right.—Yours truly, A. BAUR,
The Ceylon Manure Works.

ESTATE SUPERINTENDENTS AND PROPRIETORS.

SIR,—How is it you have never given us your views on the question of treatment of Superintendents and all Tea Planters by Proprietors? Further reference to it seems desirable as some practical good may result from adequate ventilation of the matter. As a contemporary of yours once pointed out, the only difference—a very material one too—in which way employers treat their Superintendents and Assistants is, that the one is recognized as a fellow human being, toiling in a trying and dangerous climate to make capital bring in its largest return to the owner and the other is considered simply as a machine, to be used as long as it can go and then *to be cast aside*! Awaiting your opinion.—I am, yours truly,
GREATLY INTERESTED.

GEM DIGGING AND GOLD PROSPECTING IN CEYLON.

SIR,—Will you kindly allow me for the second time a little room in your valuable columns for the benefit of your readers who may be interested in this special industry in the island.

I have read with interest some paragraphs which appeared in the local "Times" a few days ago. I agree with the explanations given by the writer, as regards the oriental amethyst (the nilakanthiya of the natives) which is a mixture of the red and blue colour in the same stone. When the ruby colour is predominant the stone is subjected to fire and in most of the cases the blue colour will disappear, leaving a first-class ruby, but when the blue colour is in excess no attempt is made to subject it to the fire and it is cut as it is and takes the name of the oriental amethyst. The real Ceylon amethyst is the best specimen I have ever seen. Certainly Lockhart's Gem Separator will not retain it as the specific gravity is very low. Even with the present system of washing if the water is muddy when the washer can't see its sparkling colour, in many instances it is lost, as this gem will not settle down under the gravel where the other gems separate from the rubbish. The amethysts, which are produced in Mexico and Brazil can't approach the Ceylon specimens. Up to date there has not been discovered any gemmiferous primitive soil or matrix from which the gems are disintegrated. Therefore gemming is carried on only where the deposits of alluvial soil hides the deposit of gravel where gems are supposed to be. This kind of gravel or strata is found at different depths, depending especially upon the size of the water-course. When digging near a river at a depth of about 90 feet, I came across two or three strata of illan one over the other. The two upper ones showed no signs of gems, but gems and gold I found in the last one, that is to say the gravel resting on the malava, as it is called by the gemmers, or the primitive soil of the English. Therefore to wash all the alluvial silt which covers the gravel seems to me to be absurd. I admit that a gem may have been picked up by a cooly woman in Rangwalatenne estate without any signs of illan. When the island came out from under the waters and before the vegetation took place, naturally the earth was naked. Therefore the water could easily wash the earth carrying with it all that it contained. In these days also landslips were more frequent and in large masses and where the waters found space there they left it, so the present alluvial deposits which now we come across are of primitive formation. Then when the earth covered herself with vegetation the water could no more wash easily the soil of the highest mountains so it is not easy to find gems in recent deposits.

After the opening of so many estates in the island and the land being bare and naked again it will not be strange to find a gem on the surface of the earth without any signs of illan. The gem being naturally disintegrated from her matrix by the action of the water and remaining there unprotected, on the surface, anyone could have picked it up; this has happened many times on upcountry estates.

As to gold the writer says in his letter of the 17th inst., that gold has been found in the illan of gem pits in specks up to the size of half grains of rice. Gold has been found by myself a great deal larger than that size. At a place called Deturangalla three miles this side of Morawaka, gold nuggets were found of ten pennyweights and larger.

Another well-known European and I went prospecting there and we could not trace the matrix from which the gold had been disintegrated. I hope as the writer says that Mr. Lockhart's Separator may locate it in the bottom of the machine, but it cannot point out the reef.

There is another trouble which the Gem Separator will find on the way, that is, that the alluvial soil of the island contains a large quantity of piroxides of manganese which will fill up the receiver in no time, so there will be little or no space left for the gems, especially the large ones which remain at the very top of the *Kalu-wella*. There is another place well-known to me where I found gold dust and pepitas, better than the last-named place. I am sure that some startling things will be found—things which will surprise not only the aforesaid writer but the inhabitants of the island.

At the time of the gold prospecting fever in Ceylon I applied to Government for assistance, but it was refused. As my means could not afford the prospecting expenses the matter died a natural death; but, if God spare my life and provide me with the means to go and prospect the place at my own expense, I will not leave a spot unsearched for the precious metal. If this trial is not allowed to me the secret will pass to my heir.—Yours faithfully,
A. DE DOMINICO.

GOLD IN UVA.

DEAR SIR,—I have read with interest your leader on "Mining and Gemming in Ceylon." I would certainly endorse Mr. Haly's opinion, that the quarts and localities at the foot of the hills below Namunukula Kanda should be searched and examined by Mr. C. Tottenham's friend Capt. Tregay; there is a village called "*Rang-denia*" reputed in ancient times as being a city of gems and gold in such abundance that the very plough shares of the villagers, were made of gold! (see a book called "Wagarupota" belonging to Teldenia R.M.) Near Wellawaya there is the site of an old ruin (temple or dagoba), with a rock inscription recording the existence in ancient times of a fabulous wealthy city and country whose inhabitants died of plague or famine; and that all their goods and chattels, *golden ploughshares* and all, were buried underneath this ruin and rock inscription. Some years ago, I got from the villagers near about this locality some ancient coins in gold and copper, and many other persons are said to have found lots of jewelry; I am of opinion that gold may be found in this locality if a search be made.

As for iron: I remember Dr. Gygax, the geologist in June 1858, was at Billuhuloya on his exploring expedition, and he reported that iron of a very superior quality existed between Ratnapura

and Haputale; iron used to be smelted in holes and kilns on the patnas by villagers near Kahagalla when I came in '58. The rough lumps of iron were taken to Ratnapura and they came back to us in the shape of catties and axes for felling our forests, and mamoties for the villagers ploughing season, besides gun-barrels and many other kinds of implements. I think Dr. Gygax said the ironstone contained 90 per cent of pure iron. What we want is coal to melt it.—Yours truly,

OLD HAND.

SALT IN THE ASH OF COCONUT HUSK.

Kandy, Dec. 27.

DEAR SIR,—Some time ago I sent you the results of an analysis of the ash of the husk of a coconut grown near the sea. The analysis shewed that the ashes contained a large proportion of chlorides, the total chlorine found being 24·80 per cent, equivalent to 40·87 per cent of common salt. The inference from the analysis was that common salt should be regarded as an essential ingredient of plant food of the coconut tree; but to make certain that a large amount of chloride was normally present in the ash of coconut husk, and that this was not simply an accidental circumstance due to the proximity of the tree to the sea, it seemed to be necessary to prove by experiment that salt was also present in large proportion in the ash of husks of nuts of good quality grown far from the sea. A short time ago I had the opportunity of demonstrating this in the case of a well-grown coconut, much above the average size, received from Mr. Austin Fernando, of Veheralanda Watta, Kurunegala. I have not Mr. Fernando's letter beside me, otherwise I should quote from it, but it was stated in the letter that the nut was grown on land that had never been manured, and that the nut had been allowed to mature on the tree.

In the case of the sea-side nut, one third part of the husk, cut longitudinally, was reduced to ashes. If the husk be regarded as built up of three carpels then oue-third part corresponds to a complete carpel.

In the case of the inland nut, with a view to minimise the loss of chloride that is liable to take place during incineration, as chlorides of the alkalies begin to volatilise at a red heat, I took only one-sixth part of the husk, corresponding to half a carpel. Assuming the two halves of a carpel or modified leaf cut longitudinally to have the same chemical composition, a half carpel may be regarded as representative of the whole husk, while a shorter time is required to reduce the smaller proportion of the husk to ashes, and the possible loss of chloride is therefore proportionally reduced.

The chlorine was the only constituent of the ash that I considered it necessary to determine. This amounted to 26·498 per cent of the ash, which is equivalent to 43·67 per cent of common salt. The following exhibits, in tabular form, a comparison of the results obtained with the sea-side and with the inland coconuts respectively:—

	Seaside Coconut.	Inland Coconut.
Weight of coconut with husk ..	3·482 lb.	4·407 lb.
Weight of nut	1·693 lb.	1·914 lb.
Weight of husk.. ..	1·789 lb.	2·493 lb.
Proportion of husk used for analysis ..	one-third	one-sixth
Percentage of crude ash yielded by husk	1·938	1·977
Percentage of chlorine in ash of hush	24·80	26·498
Percentage of common salt equivalent to chlorine in ash of husk	40·87	43·665
Weight of common salt equivalent to chlorine in one husk	·01417 lb.	·02152 lb.
Ditto in 1,000 husks same as those analysed ..	14·17 lb.	21·52 lb.

It will be observed that the larger coconut, although grown on an inland estate, yielded the larger proportion of chlorine; and even supposing the incineration of the husk of the inland-grown nut to have been conducted with somewhat less loss of chlorides the legitimate inference from these two analyses is that a sufficient supply of common salt must exist in the soil or be supplied to the soil, for the successful cultivation of the coconut tree.

M. COCHRAN.

THE "AGRICULTURAL GAZETTE" of New South Wales, Vol. VIII. Part 11. Edited by W. H. Clarke. Contents for November, 1897:—Further Notes on the Milling Qualities of the Different Varieties of Wheat, F. B. Guthrie and E. H. Gurney; Fruit-drying, W. J. Allen; The Culture of Tobacco, A. M. Howell; Summer Pruning of the Vine, M. Blunno; Pruning Ornamental Trees, H. V. Jackson; Profitable Poultry-breeding for the Local and English Markets (Conclusion), Geo. Bradshaw; the Curing of Meats, Reprint; Influence of Bees on Crops, Albert Gale; Bee Calendar for December, Albert Gale; Orchard Notes for December, Geo. Waters; Practical Vegetable and Flower Growing for December, W. S. Campbell; General Notes; Replies to Correspondents; Agricultural Societies' Shows; Label for Specimens.

MINOR PRODUCTS:—DRUG REPORT.

(From *the Chemist and Druggist.*)

London, Dec. 9.

COCA-LEAVES.—Privately the market is very firm 8d per lb. for fair green sh Truxillo leaves. Of 54 bales Truxillo offered at auction, 6 sold 8d per lb. for fair greenish, and 7d per lb. for ordinary damaged. Nine cases of good Huacoco character leaves from Ceylon sold rather cheaply at 6d per lb.

CROTON SEEDS rem in neglected. At auction ten bags of ordinary part small and dull from Shanghai sold very cheaply at 13s per cwt. Another lot of two bags, rather dark mixed Ceylon, was bought in at 40s per cwt. nominally.

KOLA.—Four small consignments, totalling 27 packages, of West Indian kola were offered at sale today, and a portion sold at 5d for sound, and from 3d to 4d per lb. for damaged quality. Another lot of nice washed West Indian kolas is held for 7d to 7½d per lb., and fair natural at 6d per lb.

OILS (Essential).—Sandalwood oil firmer on account of the advance in the price of wood in Indi . A fair quantity of eucalyptus oil was offered at auction today. At auction there was a rather large supply of Cinnamon oil. One case of this oil was bought in nominally at 4s per oz.; others are limited at from 1s 7d down to 1s per oz. Two cases of very poor rank quality were knocked down at 5d per oz. There is plenty more of this same lot on hand. Lemongrass is extremely firm, and nothing can be had on the spot below 8d per oz., but it seems doubtful whether more than 6d per oz. has yet been paid. There is practically nothing offering to arrive. At auction 10 cases, "land carriage," were bought in. Another lot of 25 cases imported via Hamburg is limited at 8d per oz. At auction it was bought in nominally at 1s per oz. One case distilled W.I. Oil of limes sold at 3s 3d per lb., which shows no alteration compared with the last sale at auction. For three cases Nutmeg oil offered 'without reserve,' and sold at lower prices, viz. 1½d to 2d per oz. For Citronella oil, November shipment 1s 1d per lb. c.i.f. terms, in drums, has been paid, and on the spot, nearest quotation is 1s 3d per lb. for drums, and 1s 4d per lb. for tins.

DEAFNESS. An essay describing a really genuine Cure for Deafness. Ringing in Ears, &c., no matter how severe or long standing, will be sent post free.—Artificial Ear-drums and similar appliances entirely superseded. Address THOMAS KEMPE, VICTORIA CHAMBERS, 19, SOUTHAMPTON BUILDINGS, HOLBORN, LONDON.

COLOMBO PRICE CURRENT.

Furnished by the Chamber of Commerce.)

Colombo, Jan. 4th, 1898.

EXCHANGE ON LONDON: CLOSING RATES. *Bank Selling Rates*:—On demand 1/3¾ to 27-32; 4 months' sight 1/3 25-32 to 7-8th: 6 months' sight 1/3 13-16 to 27-32

Bank Buying Rates:—Credits 3 months' sight 1/4 1-32 to 3·32; 6 months' sight 1/4⅛ to 5-32; Docts 3 months sight 1/4 1-16 to ⅛; 6 months sight 1/4 5-32 to 3-16.

COFFEE.—Plantation Estate Parchment on the spot per bushel R14.75. Plantation Estate Coffee, f.o.b. on the spot per cwt. R80·00. Liberian parchment on the spot per bus. R4·75. Native Coffee f.o.b per cwt. none.

TEA.—Average Prices ruling during the week Broken Pekoe, per lb. 00c. Pekoe per lb. 00c. Pekoe Souchong per lb. 29c. Broken mixed and Dust, per lb. 00c. Averages of Week's sale. No sales.

CINCHONA BARK.—Per unit of Sulphate of Quinine per lb 07c.

CARDAMOMS.—Per lb R2·35

COCONUT OIL.—Mill oil per cwt. R13.00. Dealers' oil per cwt. R12·50 Coconut oil in ordinary packages f.o.b. per ton R297.50

COPRA.—Per candy of 560 lb. R40·00

COCONUT CAKE: (Poonac) f.o.b. (Mill) per ton, R70·00

Cocoa unpicked and undried, per cwt. R46·00.

COIR YARN.—Nos. 1 to 8 { Kogalla R17.25 / Colombo R16 00

CINNAMON.—Nos. 1 & 2 only f.o.b. 60c. Nominal
Do Ordinary Assortment, per lb 51c. „

EBONY.—Per ton No sales

PLUMBAGO:—Large Lumps per ton, R365
Ordinary Lumps per ton, R345
Chips per ton, R220. Dust per ton, R145 00

RICE.—Soolye per bushel, { R 3.48 to 3·65
„ per bag, { R9.15 to 9·70
Pegu and Calcutta Calunda None,
Coast Calunda per bushel, R3·87 to R4 20
Muttusamba per bushel, R4·25 to R4 60
Kadappa and Kuruwe per bushel, R3·12 to R3 44
Rangoon Raw 3 bushel bag.—R9.75

LOCAL MARKET.

(By Mr. James Gibson, Baillie St. Fort.)

Colombo Jan 4th, 1897.

Estate Parchment:—per bushel R14·00 to 14·25
Chetty do do R13·00 to 13·25
Native Coffee
do F O. B per cwt } R12·00
Liberian coffee:—per bush R2·50 4·00
do clean coffee:—per cwt R36·00
Cadamoms Malabar:—per lb. R2·00 to 2.25
do Mysoore do R2·25 to 2·70
Cocoa unpicked per cwt R34.00 to 36·00
do picked do R45·00
Rice Market List
Soolai per bag of 164 lbs nett R9.15 to 9.70
Slate & 1st quality soolai:—per bushel R3 60 to 3.70
Soolai 2 & 3rd. do do do R3.66 to 3.60
Coast Callunda R3·87 to 4.20 Scarce
Muttusamba ordinary R4.60 to 4.75
Kuruvee R3.12 to 3.44
Coast Kara R3.75 to 4·00
Kazala R3·50
Raw Rangoon Rice per 3 bushels bag R9.75
Cinnamon. per lb No 1 to 4 at 54cts. to 56cts
do do 1 & 2 63c. 65cts
do Chips. per candy none
Coconuts. Ordinary per thousand R08.00 to 40.00
do Selected do R41 00 to 42.00
Coconut Oil per cwt 13·00 to 13·25
do F. O. B. per ton 293 to 295
Copra per candy:—
Kalpitiya do R36.00 to 47.00
Marawila do R35.00 to 36.00
Cart Copra do R33.00 to 34·00
Poonac Gingelly. per ton 80.00 to 84.
do Chekku do R62.00 to 67.00
Mill (retail) do R75.00 to 78·00
Cotton Seed do R77·50 to 80
Satinwood per cubic feet. R2.00 to 2.50
do Flowered do 6.00 to 8.00
Palu. do 1.30 to 1.40
Halmilla do 1.30 to 1.70
Tuun Pali do R1.30 to 1.40
Ebony per ton R80 to 180
Kitul fibre per cwt R35.00
Palmyra do do R9 50 to 22·00
Jaffna Black Cleaned per cwt R20.00 to 22·0
do mixed do R18.00 to 19
Indian do R9.50 to 17.00
do Cleaned do R12.50 to 17
Sapanwood per ton R55·00
Kerosine oil American per case R7.27 to 7.37
do Bulk Russian per tin R2.60 to 2·65
do Russian in Case R5.25 to R5.37
do Sumatra in Case R5.00 to 5 05
Kapok Cleaned F. O. B.—No stock
do unpicked do none
Croton Seed per cwt 25.00 to 40
Nux Vomica do R4.60 to 6.00
Plumbago per ton, according to quality { Large lumps R240 to 380 / do „ R220 to 360 / do Chips R120 to 220 / do Dust R 90 to 140

CEYLON EXPORTS AND DISTRIBUTION.

1896-97.

COUNTRIES.	Coffee cwt Plantation	N'tive	Total.	Cinchona. 1897 B'nch & Trunk lb	Tea. 1897 lb.	Tea. 1896 lb.	Cocoa cwt.	C'moms lb.	Cinnamon Bales lb	Cinnamon Chips lb.	Coconut Oil 1897 cwt.	Coconut Oil 1896 cwt.	P'bago 1897 cwt.
To United Kingdom ..	12659	121	12780	352963	98930059	89196046	29739	263252	1061987	254452	68468	85969	148842
„ Austria	259	2	261	..	19883	31011	13	..	10100	57400	8717	22910	..
„ Belgium	..	1	1	..	10010	31695	503	4659	93900	88536	1133	3314	38538
„ France	653	..	653	624	91066	72185	282	...	76200	18960	..	120	411
„ Germany ..	216	..	216	4132	256584	119002	342	30290	654088	356302	5754	17141	63517
„ Holland	58	.	58	..	19775	6120	..	..	16200	..	..	400	1885
„ Italy ..	..	.	..	3132	6121	10770	..	..	157400	146652	269	1917	145
„ Russia	..	..	..	..	439349	246233	..	..	..	..	299	81	..
„ Spain	..	..	..	..	28070	54185	..	..	270760	23240	..	208	..
„ Sweden	250	..	250	..	52875	9280	..	..	..	..	303	402	414
„ Turkey	..	..	..	..	12796	17304	...	..	..	..	..	..	..
„ India	57	..	57	...	937217	921132	5	203799	61	...	162013	80932	684
„ Australia	4468	212	4680	..	12446700	10324856	60	25	6510	32696	2185	2441	1051
„ America	202	..	202	263142	826006	613322	47	..	109828	43600	88060	66520	88810
„ Africa	26	..	26	..	252476	134538	..	299	..	..	52	4	..
„ China	164	..	164	29353	690162	370480	..	..	70000	..	487	4277	369
„ Singapore	..	35	35	..	44215	93445	599	200	..	..	53153	34132	.
„ Mauritius	..	..	..	..	11790	124254	..	..	..	..	..	..	..
„ Malta	..	..	..	..	72010	141250	..	..	..	..	..	..	..
Total exports from 1st Jan. to 21st Dec. 1897	18527	371	18898	646600	108730015		31590	502524	2527034	1021838	390833		344666
do 1896	20962	778	21740	1309560	102517108		28286	406061	2129579	765776	320769		315867
do 1895	58680	3877	62557	894981	91279119		25050	333286	9024271	842446	360579		300191
do 1894	28198	652	28850	2438993	78904376		19250	276315	1878092	583368	440019		313303

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From Lewis & Peat's Fortnightly Prices Current, London, December 15th, 1897.)

	QUALITY.	QUOTATIONS.
ALOES, Socotrine cwt.	Fair to fine dry	44s a 100s
Zanzibar & Hepatic ,,	Common to good	11s a 76s
BEES' WAX, ,, Zanzibar & Bombay White ,,	Good to fine	£7 2/6 a £7 10s
Yellow ,,	Fair	£5 a £6
Madagascar ,,	Dark to good palish	£5 12/6 a £6
CAMPHOR, China ,,	Fair average quality	95s
Japan ,,	,, ,, ,,	100s
CARDAMOMS, Malabar lb	Clipped, bold, bright, fine	3s 6d a 4s
	Middling, stalky & lean	2s 9d a 3s ?d
Ceylon.—Mysore ,,	Fair to fine plump	3s a 4s
	Seeds	3s 5d a 3s 6d
,, Tellicherry ,,	Good to fine	2s 9d a 3s
	Brownish	2s 6d
,, Long ,,	Shelly to good	2s a 2s 10d
,, Mangalore ,,	Med brown to good bold	3s 6d a 3s 9d
CASTOR OIL, Calcutta ,,	1sts and 2nds	3⅞d a 5d
Madras ,,		3¼d a 3¾d
CHILLIES, Zanzibar cwt.	Dull to fine bright	27s 6d a 35s
CINCHONA BARK.— Ceylon lb.	Ledgeriana Chips	3½d a 5d
	Crown, Renewed	4½d a 8d
	Org. Stem	1½d a 6¾d
	Red Org. Stem	3d a 4⅝d
	Renewed	3½d a 5¾d
CINNAMON, Ceylon 1sts per lb.	Ordinary to fine quill	10d a 2s 4d
2nds	,, ,,	9d a 1s 7d
3rds	,, ,,	8½d a 1s 5d
4ths	,, ,,	8d a 1s 3d
Chips	,, ,,	2¾d a 3¼d
CLOVES, Penang lb.	Dull to fine bright bold	4½d a 1s
Amboyna	Dull to fine	5d a 4½d
Zanzibar and Pemba	Good and fine bright	3d a 3¾d
	Common dull to fair	2⅝d a 2 11-16d
Stems	Fair	1¼d
COCULUS INDICUS cwt.	Fair	8s 6d
COFFEE Ceylon Plantation ,,	Bold to fine bold colory	106s a 116s
	Middling to fine mid	95s a 105s
	Low mid. and low grown	90s a 95s
	Smalls	70s a 90s
Native ,,	Good ordinary	40s a 85s
Liberian ,,	Small to bold	38s a 55s
COCOA, Ceylon ,,	Bold to fine bold	75s a 85s
	Medium and fair	68s a 73s
	Triage to ordinary	50s a 65s
COLOMBO ROOT ,,	Fair to good	38s a 50s
COIR ROPE, Ceylon ton		nominal
Cochin ,,	Ordinary to fair	£10 a £16
FIBRE, Brush ,,	Ord. to fine long straight	£10 a £21
Cochin ,,	Ordinary to good clean	£15 a £21
Stuffing ,,	Common to fine	£5 a £6 10s
COIR YARN, Ceylon ,,	Common to superior	£12 a £26 10s
Cochin ,,	,, ,, very fine	£12 a £34
do. ,,	Roping, fair to good	£10 10s a £13
CROTON SEEDS, sift. cwt.	Dull to fair	50s a 60s
CUTCH ,, ,,	Fair to fine dry	9s 3d a 32s 6d
GINGER, Bengal, rough ,,	Fair	15s
Calicut, Cut A ,,	Good to fine bold	80s a £5
B & C ,,	Small and medium	28s a 75s
Cochin Rough ,,	Common to fine bold	17s a 30s
	Small and D's	10s a 20s
Japan ,,	Unsplit	14s
GUM AMMONIACUM ,,	Sm. blocky to fine clean	30s a 50s
ANIMI, Zanzibar ,,	Picked fine pale in sorts	£10 7s 6d a £13
	Part yellow and mixed	£8 2/6 a £10 10s
	Bean and Pea size ditto	70s a £7 12/6
	Amber and dk. red bold	£5 10s a £7 10s
	Med. & bold glassy sorts	80s a 100s
Madagascar ,,	Fair to good palish	£4 8s a £8
	,, ,, red	£4 5s a £9
ARABIC E. I. & Aden ,,	Ordinary to good pale	40s a £2
Turkey sorts ,,		75s a 85s
Ghatti ,,	Pickings to fine pale	15s a 45s
Kurrachee ,,	Good and fine pale	52s 6d a 57s 6d
	Reddish to pale selected	30s a 40s
Madras ,,	Dark to fine pale	30s a 35s
ASSAFŒTIDA ,,	Clean fr to gd. almonds	40s a 80s
	Ord. stony and blocky	30s a 37s
KINO ,,	Fine bright	12s 6d a 15s
MYRRH, picked ,,	Fair to fine pale	70s a 82s 6d
Aden sorts ,,	Middling to good	33s a 57s 6d
OLIBANUM, drop ,,	Good to fine white	34s a 60s
	Middling to fair	20s a 31s 6d
pickings ,,	Low to good pale	11s a 12s 6d
siftings ,,	Slightly foul to fine	9s 6d a 14s
INDIARUBBER, Assam lb	Good to fine	2s 0½d a 2s 6¼d
	Common to foul & mxd.	1s 3d a 1s 6d
Rangoon ,,	Fair to good clean	1s 4d a 2s 6d
Borneo ,,	Common to fine	1s 2½d a 1s 9¾d

	QUALITY.	QUOTATIONS.
INDIARUBBER, (Contd). Java, Sing. & Penang lb.	Foul to good clean	1s a 2s 3d
Mozambique ,,	Good to fine Ball	2s 7½d a 2s 8½d
	Ordinary to fair Ball	2s 4½d a 2s 7d
	Low sandy Ball	10d a 1s 1d
	Sausage, fair to good	1s 8½d a 2s 7¼d
	Liver and livery Ball	2s 4½d a 2s 5½d
Madagascar ,,	Fr to fine pinky & white	1s 11d a 2s 5d
	Fair to good black	1s 6d a 1s 11½d
	Niggers, low to good	1s 4½d a 1s 5d
INDIGO, E.I. ,,	Bengal—	
	Shipping mid to gd violet	4s 4d a 5s 1d
	Consuming mid. to gd.	3s 4d a 5s
	Ordinary to mid. good	2s 10d a 3s 3d
	Mid. to good Kurpah	2s a 3s 6d
	Low to ordinary	1s 3d a 1s 11d
	Mid. to good Madras	1s 1d a 2s 3d
MACE Bombay & Penang per lb.	Pale reddish to fine	1s 10d a 2s 9d
	Ordinary to fair	1s 6d a 1s 9d
	Pickings	1s 3½d a 1s 4d
MYRABOLANES, Madras cwt.	Dark to fine pale UG	3s 9d a 5s 6d
	Fair Coast	4s 6d
Bombay ,,	Jubblepore	4s a 7s
	Bhimlies	4s 3d a 9s
	Rhajpore, &c.	3s 9d a 7s
Bengal ,,	Calcutta	3s 6d a 5s 6d
NUTMEGS— lb.	64's to 57's	3s a 3s 2d
Bombay & Penang ,,	110's to 65's	1s 4d a 2s 1½d
	160's to 130's	7d a 1s 1d
NUTS, ARECA cwt.	Ordinary to fair fresh	12s a 14s
NUX VOMICA, Bombay per cwt.	Ordinary to middling	4s a 5s 6d
Madras	Fair to good bold fresh	7s a 7s 6d
	Small ordinary and fair	5s 6d
OIL OF ANISEED lb	Fair merchantable	7s 6d
CASSIA ,,	According to analysis	4s 9d a 6s 3d
LEMONGRASS ,,	Good flavour & colour	8d
NUTMEG ,,	Dingy to white	3½d a 4d
CINNAMON ,,	Ordinary to fair sweet	5d a 1s 7d
CITRONELLE ,,	Bright & good flavour	1s 2d
ORCHELLA WEED—cwt		
Ceylon ,,	Mid. to fine not woody	10s a 12s 6d
Zanzibar ,,	Picked clean flat leaf	10s a 15s
	,, wiry Mozambique	10s a 11s
PEPPER (Black) lb. Alleppee & Tellicherry	Fair to bold heavy	3¾d
Singapore	Fair	3⅝d a 3 11-16d
Acheen & W. C. Penang	Dull to fine	3½d a 3⅝d
PLUMBAGO, lump cwt.	Fair to fine bright bold	20s a 28s
	Middling to good small	15s a 19s
chips ,,	Dull to fine bright	10s a 15s
dust ,,	Ordinary to fine bright	5s 6d a 10s
SAFFLOWER ,,	Good to fine pinky	80s a 85s
	Middling to fair	60s a 70s
	Inferior and pickings	50s a 55s
SANDAL WOOD— Bombay, Logs ton.	Fair to fine flavour	£20 a £35
Chips ,,	... ...	5s a £3
Madras, Logs ,,	Fair to good flavour	£30 a £50
Chips ,,	Inferior to fine	£4 a £8
SAPANWOOD Bombay ,,	Lean to good	£4 a £5
Madras ,,	Good average	£4 a £5 nom.
Manila ,,	Rough & rooty to good	£4 10s a £5 15s
Siam ,,	bold smooth	£6 a £7
SEEDLAC cwt.	Ord. dusty to gd. soluble	70s a 80s
SENNA, Tinnevelly lb	Good to fine bold green	3¾d a 4½d
	Fair middling medium	3d a 3½d
	Common dark and small	1½d a 2¾d
SHELLS, M. o'PEARL— Bombay cwt.	Bold and A's; D's and B's; Small	£5 15s a £6 12/6
Mussel ,,	Small to bold	£1 5s a £4 2/6
TAMARINDS, Calcutta... per cwt	Mid. to fine bl'k not stony	7s a 8s 6d
Madras	Stony and inferior	4s a 6s
TORTOISESHELL— Zanzibar & Bombay lb.	Small to bold dark mottle part heavy	15s a 23d 6d
TURMERIC, Bengal cwt.	Fair	13s 3d
Madras ,,	Finger fair to fine bold bright	18s a 19s
Do. ,,	Mixed midlng.	12s
Do. ,,	Bulbs	12s
Cochin ,,	Finger	12s 6d a 13s
	Bulbs	7s 6d
VANILLOES— lb. Mauritius and Bourbon 1sts	Gd. crystallized 3½ a 9 in.	18s a 27s 6d
2nds	Foxy & reddish 4½ a 8 ,,	16s 6d a 21s
Seychelles 3rds	Lean and inferior	7s a 11s 6d
VERMILION lb.	Fine, pure, bright	2s 2d
WAX, Japan, squares cwt	Good white hard	41s